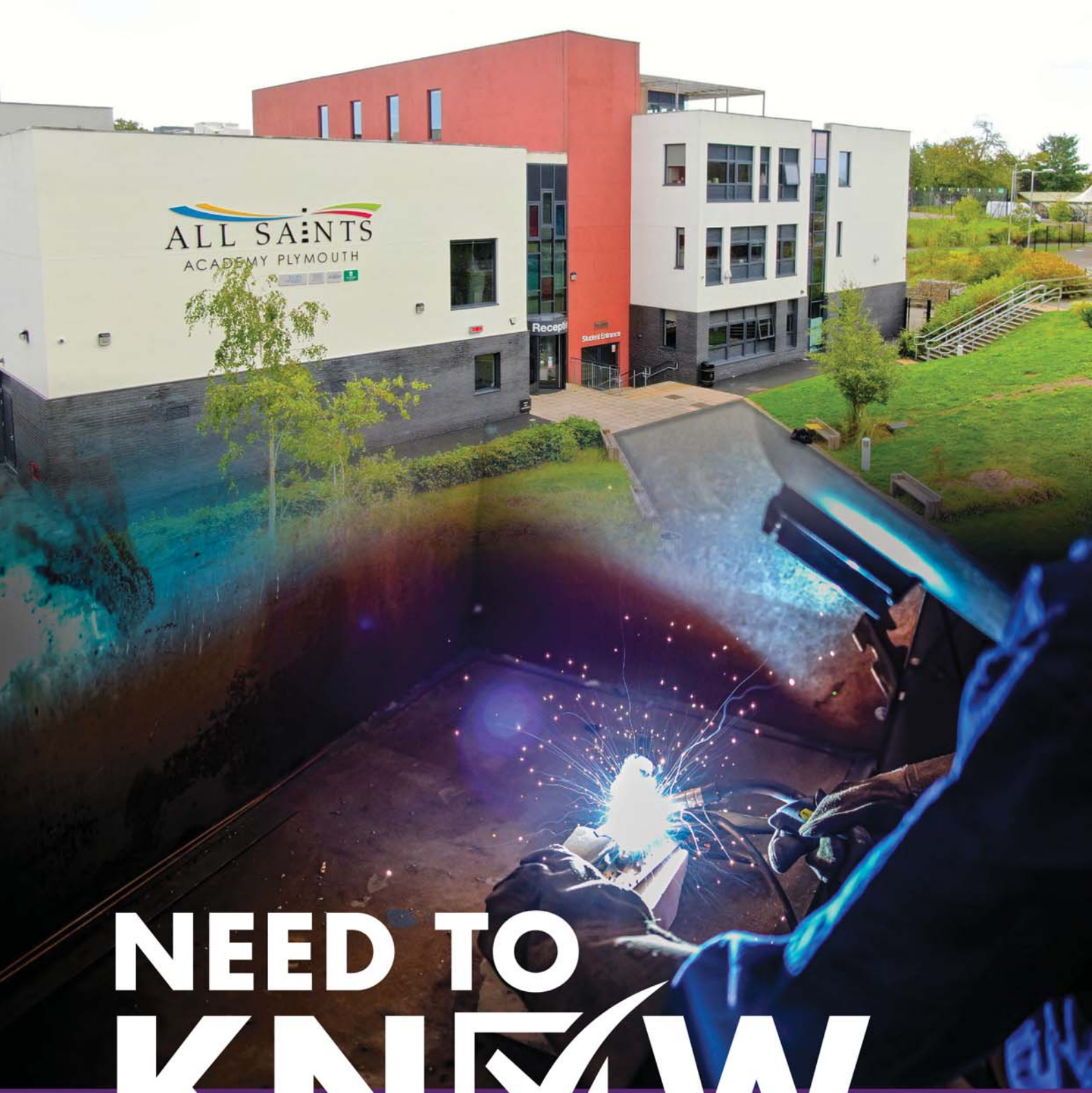


NEED TO KNOW BOOK

Year 9
Autumn Term 2024

ALL SAINTS
ACADEMY PLYMOUTH

Table of Contents

Week A

Period	Monday	Tuesday	Wednesday	Thursday	Friday
1					
Breaktime					
2					
3					
Tutor/Lunch					
4					
Extra Curricular					

Week B

Period	Monday	Tuesday	Wednesday	Thursday	Friday
1					
Breaktime					
2					
3					
Tutor/Lunch					
4					
Extra Curricular					

Homework Expectations

You are expected to compete up to 1hour of Homework per night. This is split into 3 subjects at 20mins each.

	3 x 20 Minute Sessions		
	Subject 1 20 mins	Subject 2 20 mins	Subject 3 20 mins
Monday	Sparx Reader	Science	Science
Tuesday	Sparx Reader	Geography	French
Wednesday	Sparx Reader	Maths : Sparx	History
Thursday	Sparx Reader	Maths : Sparx	RE
Friday	Sparx Reader	Maths : Sparx	

Where is my homework?

Maths

You maths homework is found at www.sparxmaths.uk. You will complete your Compulsory Homework on a Monday.
If you have completed over 80% and are stuck on your last few questions, your teacher will help you on Tuesday.

Sparx Reader

Your Sparx reader homework is found at www.sparxreader.com You will complete 20 minutes of reading every day Tuesday – Friday. You can, of course, complete more if you like!

Science

Your Science homework can be found at www.educake.co.uk. You will answer a series of questions once a week. When it comes to revising, you will have the option of picking a topic, reading an overview, and taking a quiz.

English, History, French and RE

Homework for these subjects will be found in your Google Classroom in the form of a quiz. These quizzes are to test that you have learned the knowledge in your Need to Know booklet. We have high expectations of you and expect students to try their best and achieve the best possible marks. We will give rewards for excellent attainment and we will help everyone achieve by using after school interventions to make sure no one falls behind.

At All Saints, we are organised and don't make excuses for ourselves. If we know we have evening plans, we complete our homework the night before to make sure we are free to go to our planned event. We always want the best for ourselves and my teachers want the same.

Reflection Sheet

Name: Tutor: Year:

Use this reflection sheet to track your progress and attitude to learning score after each progress check. This sheet will be used in your parent evening meetings with your teachers to discuss your areas of strengths, weaknesses and ways to improve. If your average attitude score is below a certain average your parents will be called in for a meeting with your Head of house and SLT member.

ATL SCORES	What will I get at GCSE?
0-1	Students who achieve an average of 1 or below usually leave school with no GCSEs.
1-2	Students who achieve an average of 1-2 usually leave with 1s or 2s (E or F) at GCSE
2-3	Students who achieve an average of 2-3 usually leave with 2s or 3s (D or E) at GCSE
3-4	Students who achieve an average of 3-4 usually leave with 3/4/5s (C or D) at GCSE
4-5	Students who achieve an average of 4-5 usually leave with 6/7/8s at GCSE

Average attitude to learning score	Term 1	Term 2	Term 3	Term 4

Subject rank	***Subject*** *Maths*	***Subject*** *English*	***Subject*** *Science*	***Subject***	***Subject***	***Subject***	***Subject***	***Subject***	***Subject***	***Subject***
Term 1	/	/	/	/	/	/	/	/	/	/
Term 2										
Term 3										

Term 1 - Reflection (Answer the questions by filling in the boxes in blue or black pen)

Are you happy with your rank scores and ATL?	What subjects do you need to improve?	How will you get there?

Reflection Sheet

Term 2 - Reflection

Has your rank scores and ATL improved from term 1? If no, why not?	What subjects do you need to improve in?	How will you get there?

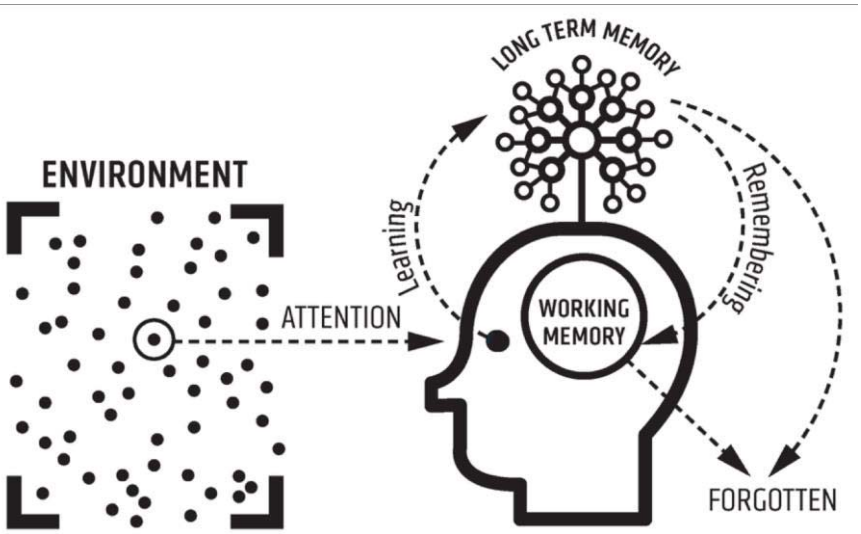
Term 3- Reflection

Has your rank scores and ATL improved from term 2? If no, why not?	What subjects do you need to improve in?	How will you get there?

Signed_____ Tutor
signature_____

Memory

Your memory is split into two parts: the working-memory and the long-term memory. Everybody's working-memory is limited, and can therefore become easily overwhelmed. Your long-term memory, on the other hand, is effectively limitless.



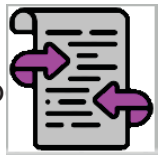
You can support your working memory by storing key facts and processes in long-term memory. These facts and processes can then be **retrieved** to stop your working memory becoming overloaded.

Need to know booklets are a key way to help you learn. Each booklet has the key information that needs to be memorised to help you master your subject and be successful in lessons.

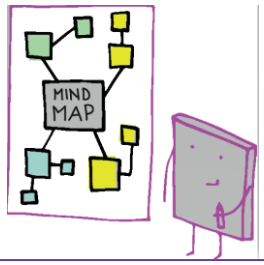
There is strong scientific evidence from cognitive psychology that shows the benefits of **self-quizzing** in promoting **retrieval strength**. This is your ability to quickly recall key facts related to your subject or topic

How should I self-quiz and how often?

There are lots of different ways to learn the material in your need to know b

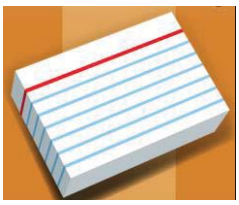


You could:



Draw a mind map, jotting down everything that you can remember from the need to know booklet.

Cover up one section of the need to know booklet and try and write out as much as you can from memory.



Make flash cards based on the need to know booklet and ask someone to quiz you.

SENTENCES.
HAND
ARTICULATE.
PROJECT
Eye contact

Make up mnemonics to help you remember key facts, then write these out from memory.

Making revision notes and self-quizzing will help you be a more successful learner.

Post 16 pathways of Plymouth — Sixth forms — Apprenticeships — Employment — Resources

Support — Opportunities — Choosing a career — Parents guide —Writing a CV— Employability skills

Year 9: Day of the Dead

The Formal Elements:

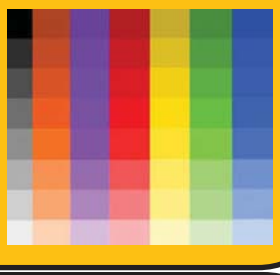
The Formal Elements of Art are the parts used to make a piece of art work. It is impossible to create a piece of art, even if it is only a doodle, without using some or all of them. The art elements are Line, shape, form, tone, texture, pattern, colour and composition. They are often used together and how they are organised in a piece of art determines what the finished piece will look like.

Line

A line is a path, left by a moving point. E.G. a pencil, or a paintbrush dipped in paint. A line can take on many forms. E.g. Horizontal, diagonal or curved. A line can be used to show contours, movements,

Tone

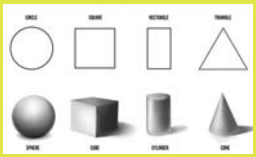
Tone means the lightness and darkness of something. This could be a shape and/or how dark or light a colour appears.



Shape & Form

A shape is an area enclosed by a line. It could be just an outline or it could be shaded in.

Form is a three dimensional shape such as a sphere, a cube or a cone.



Texture

Texture is the surface quality of something, the way something feels or looks like it feels. There are two types of texture, actual texture and visual texture.

Actual Texture: really exists so you can feel it or touch it.

Visual Texture: Created by using different marks to create the impression of actual texture.

Colour

There are three primary colours:

Red, Yellow, Blue

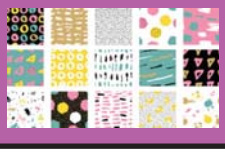
By mixing any two primary colours together, you get secondary colours.

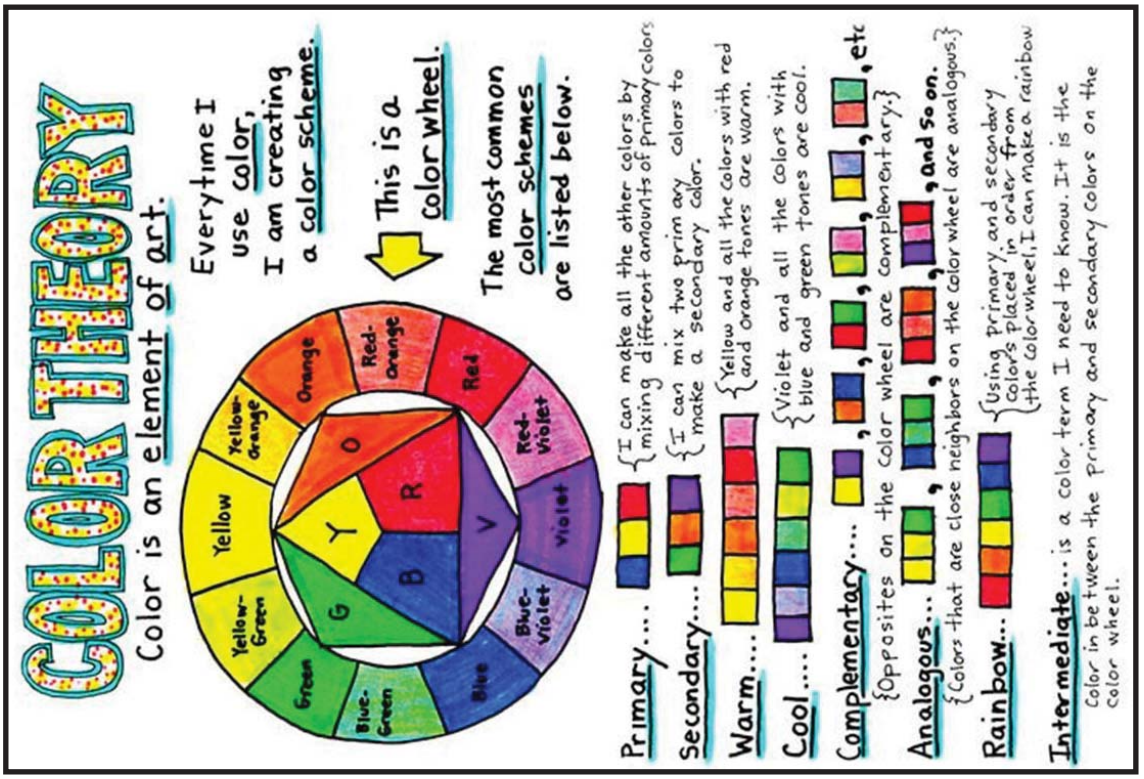
Orange, Green and Purple

Pattern

Pattern is a design that is create by repeating lines, shapes and tones or colours.

Patterns can be manmade such as a design on fabric or natural like the print on animal fur.





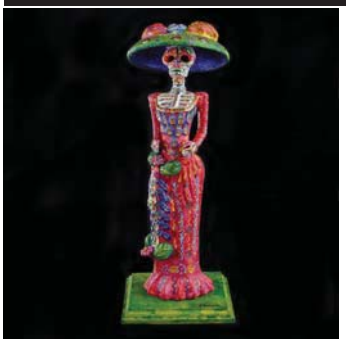
Day of the Dead

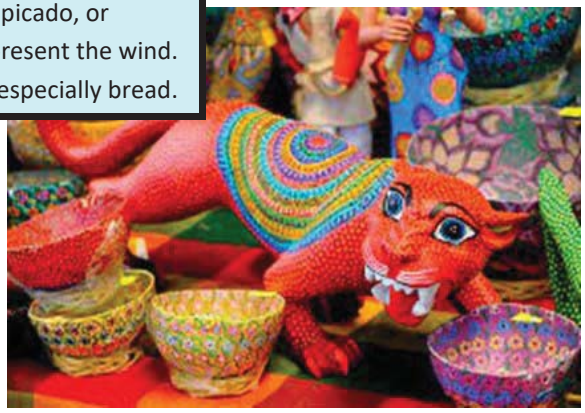
Día de los Muertos, or Day of the Dead, is a celebration of life and death. While the holiday originated in Mexico, it is celebrated all over Latin America with colourful calaveras (skulls) and calacas (skeletons). The holiday which celebrated on November 1 and 2, is like a family reunion—except dead ancestors are the guests of honour. It's an intimate family tradition observed with home altars and visits to local cemeteries to decorate graves with flowers and sugar skulls. They bring their deceased loved ones' favourite food and hire musicians to perform their favourite songs.

An ofrenda is an altar, built to honour lost loved ones. Offerings are placed upon the ofrenda, to help us remember, learn about, and celebrate their lives. Every ofrenda also includes the four elements: water, wind, earth and fire. Water is left in a pitcher so the spirits can quench their thirst. Papel picado, or traditional paper banners, represent the wind. Earth is represented by food, especially bread.

A Cempasuchil Is a Marigold flower and is the Aztec a sacred representation of **the sun** and was believed to have healing and even magic properties.

Calavera means skull in Spanish. Wearing, having images of or sculptures of calavera is meant to be a celebratory and welcoming gesture for the souls of the dead when they come to visit their loved ones in the Land of the Living.



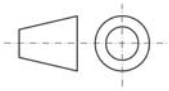


A calaca (Spanish pronunciation: [kaˈlaka], a Mexican Spanish name for skeleton) is a figure of a skull or skeleton (usually human) commonly used for decoration during the Mexican Day of the Dead festival, although they are made all year round.

Alebrijes are represented in Mexican folk art as vibrant, fantastical creatures that often resemble dragons, lizards and other mystical creatures. They are carved from wood and painted in bright vibrant colours. Alebrijes weren't part of the orginal Day of the Dead traditions, but they have become a part of the modern-day celebrations. They appeared appear In the animated Disney film about Day of the Dead, Coco. In it Alebrijes are "spirit animals" that guide the spirits of ancestors on their journey.

Art and Design Assessment Objectives:							
	DEVELOP	EXPERIMENT		RECORD		PRESENT	
	Artist Research.	Explore different materials		Observational drawings		Produce a final piece	
	Explore Ideas.	Explore different techniques		Collecting image		Link to prep work from project.	
	Be Inspired.	Refine your work		Taking photos			
	Personal comments and opinions.	Evaluate your success		Annotating your work			

Week	I will need to know:	So that I can:
1 Design Process	The first stage of the design process is where the client will give the designer a ***design brief***. This is an explanation of the type of product that the designer must design, their task if you like. The designer will then need to analyse this brief and explore opportunities for design and problem solving. They will carry out ***market research*** so that they can become an expert on the target market's needs and wants but also other ***competitor products*** that are already available. Designers often carry out a product analysis or product disassembly to help them learn more about the products they will be competing against.	Design quality products that meet the requirements of a client and target market.
2 Design process continued	After market research, designers will create a ***design specification***, this is a list of ***specific criteria for the success of the product.*** Usually consisting of a range of ***'it must' or it should'*** statements. Next the designer will generate a ***wide range of design ideas***, select the best ones to develop further and gradually and with the help of the client, narrow this down to one idea which they will take to the next stage. Designers will now often ***create prototypes*** of the design, testing elements and continuously improving the design. This will usually lead to the detailed design phase, often referred to as ***DFMA (Design For Manufacture and Assembly).*** This leads to the manufacture of the product and the evaluation of the final product, often leading to continued design activity.	Design quality products that meet the requirements of a client and target market.
3 Past and present designers	**Philippe Starck** is a **French industrial designer** who has designed a huge variety of products ranging from luxury yachts to hotels and kitchen equipment. He spent much of his career working for the Italian brand **Alessi** who specialise in quirky kitchen and home products. Alessi's products very often have **aesthetics** (visual appeal) as the priority, their goal is to design products that meet the consumer's needs and requirements while at the same time making the consumer happier. Many of their products have a character or cartoon like appearance. This styling has had a big influence on the work of many other designers. Many Alessi products are collectors items and are known as **iconic products** (well recognised/famous/influential).	Design products with the influence of successful past and present designers.
4 Prototype	***Prototypes*** are models of a design , these are created so that a concept can be tested. Prototypes can be **virtual** or **physical.** Virtual prototypes are creating on a computer using CAD. These can be tested in simulations, for example a virtual aeroplane wing can be tested against stresses virtually before spending thousands making a physical model. Physical prototypes are made often from card, foam or even clay. Prototypes are carefully tested to see if they function as intended, look appealing to the target market, fit with other components, are strong enough and more.	Develop my ideas and ensure they are as developed as possible before manufacture.
5 Ethical consideration in designing	It is important for a designer to consider the **impact of their product on society, people from different cultures and the planet.** Designing a hand gun toy for a child may be fun to play with but the effect of children playing with toy guns should be considered. Designing a bike that is aimed at people who wish to cycle to work will have a positive effect of people's health and the environment. Consider the possible effects of these: A sweet designed to look like a cigarette, a T-shirt with a swear word on, a computer game where the baddies are from a particular country, an electric vehicle, smiley face car sticker.	Consider the wider impact of our products.
6 Inclusive design	A successful design should also ensure a variety of end users can use the product safely and effectively. They might make adaptations with accessibility in mind, for example: a **braille keyboard** for those with sight difficulties, a **long shoe horn** to allow an elderly person to put a shoe on without having to bend down or fastenings such as **Velcro for small children** to use on a shoe. As people get older it is important that products are designed in a way that help people not lose their independence. Tasks such as changing batteries in a TV remote may seem simple but someone suffering from arthritis may find this extremely hard. Designer will therefore aim to design products that are ergonomic and user friendly for all. This is **inclusive design.**	Ensure our designs do not exclude anybody where possible.
7 Sustainable design The 6 Rs	Considered when designing any product and will help the designer create a ***more sustainable product***. Remember this means an environmentally friendly product. **Recycle** (can materials be recycled?), **Re-use** (can parts be used again?), **Reduce** (can less material or energy be used?), **Re-think** (can the design be changed? Can we step back to the original problem and find a radically new way to solve it with less environmental impact?), **Refuse** (refuse to use harmful materials or processes), **Repair** (make spare parts available and make it easy to repair and maintain so its life will be longer and not need replacing so quickly.)	Be responsible and protect our planet through my design decisions.

Topic	I will need to know:	So that I can:
1 Engineering Drawings	An engineering drawing is a type of drawing that is used to communicate information about an object. It will show an object from multiple angles, and will give dimensions. It will also contain other information such as the materials the object is made from, who created the engineering drawing, the date the drawing was made and the tolerance.	Work from Engineering Drawings to produce accurate virtual prototypes.
2 Line types	**Outline/drawing line**—represents the visible edges or outlines of an object. **Hidden detail line**—indicates features that are not visible in the current view but are present on the object. **Centre line**—shows the centre or axis of symmetry of a cylindrical or symmetrical object. **Dimension line**—specifies the size of objects or features within the drawing. **Construction line**—temporary lines used for layout or alignment purposes, not included in the final design.	Understand the different line types used in Engineering Drawing.
3 Orthographic drawings	**Third angle orthographic drawings** are technical drawings used in engineering to represent objects in three dimensions. In this method, the object is imagined to be enclosed within a transparent box, with each face projected onto a separate plane. The **front, top, and side** views are drawn, showing the object from different perspectives. Third angle projection is used in engineering and manufacturing because it provides clear and accurate representations of objects for design and production purposes. In an engineering drawing, this symbol will be used in the Title Block to represent a third angle orthographic drawing. 	Present my design ideas in different angles.
4 Plastics	When designing and manufacturing new products, excessive use of plastics leads to vast amounts of non-biodegradable waste, which often ends up in landfills or oceans, emitting harmful greenhouse gases when incinerated. Additionally, the production of plastic materials requires fossil fuels, contributing to carbon emissions. Sustainable product design seeks alternatives to plastic, reducing waste and mitigating its environmental impact to combat the climate crisis. We use the 6 R's to help us consider sustainability when designing and manufacturing new products.	Consider the ethical implications of my design choices.
5 Technology Push and Market Pull	In engineering design, two approaches guide innovation: technology push and market pull. **Technology push** occurs when new technologies inspire product development, driving engineers to create solutions based on emerging advancements. **Market pull** responds to consumer demands and market needs, prompting engineers to develop products that fulfil specific requirements. By understanding both, engineers can balance innovation and practicality, ensuring their designs meet the needs of both emerging technologies and consumer preferences.	Understand what inspires innovation in the design of new products.
6 Anthropometric data and ergonomics	Anthropometric data and ergonomics are vital in engineering design. Anthropometric data involves measuring and analysing human body dimensions, like height and reach. Ergonomics focuses on designing products that fit human capabilities and limitations to enhance comfort and efficiency. Understanding these principles ensures that products are user-friendly and accessible to a wide range of people. By considering anthropometric data and ergonomics, engineers can create designs that optimise usability and minimise the risk of injury or discomfort for users.	Design products that are comfortable and easy to use.

Unseen Poetry Knowledge Organiser

STRUCTURE

TECHNIQUE	DEFINITION
End-stopped line	use of full stop, colon, semi-colon at end of line
Enjambment	no punctuation at end of lines / lines run-over
Caesura	sudden full stop or semi-colon in middle of line
Rhyming couplet	2 lines together that rhyme
Rhyme scheme	set pattern of rhyme e.g. AABB, ABAB
Exclamatory sentence (!)	show strong emotion/ surprise
Interrogative sentence (?)	show questioning/despair/wonder
Imperative sentence (bossy verb)	gives an order / command
Repetition	Including the same significant word or phrase across a text
List of 3/ tri-colon	use of 3 things/ words in a list for emphasis
Contrast	use of contrasting ideas within or across the text
Juxtaposition	positioning 2 contrasting words alongside
Anaphora/ repeated structure	same pattern at beginning of phrase
Extended metaphor	use for cohesion across text (joining ideas)
Motif	repeated image used as cohesion across the text

LANGUAGE

TECHNIQUE	DEFINITION
archaic language	ancient words to give sense history
allusion	use of reference to another story / text / idea
colloquialisms	informal, 'chatty' words, Non-Standard English
contrast	Use of words or ideas that are opposite
dialect words	words linked to a particular region
hypophora	asking a question then answering it
imagery	use of strong visual images through words
lexical/semantic field	pattern of words within same topic area
metaphor	one thing is said to be something else: a literary lie
non-standard English	diff grammar & words to normal
oxymoron	juxtaposition of opposite ideas together
personification	giving human qualities to non-human
pronouns	inclusive we/us or 3rd person or 2nd person?
rule of 3 / tri-colon	using list of 3 things for emphasis
sensory language	using feel, sight, sound, taste, hear
simile	comparison using 'like' or 'as' to give meaning
symbolism	use of a symbol to represent an extra idea
tone	explore how 'voice' in poem sounds e.g. bitter

SOUND

TECHNIQUE	DEFINITION
alliteration	series of words starting with same sound
assonance	series of words with same repeated vowel
consonance	use of repeated consonant
fricatives	f, v, sh, th harsh sounds, unpleasant feel
onomatopoeia	Words whose sounds imitate their meanings
plosive sounds	p, b, t, d – implies shock
sibilance	alliteration but with 's' - usually sinister

FORM

TECHNIQUE	DEFINITION
Stanza	unit of verse
Quatrain	a regular 4-line stanza (tercet is 3-line stanza)
Sestet	a 6-line stanza (with octave, 8-line, to create a sonnet)
Narrative voice	the speaker of the poem
Ballad	simple narrative with strong rhyme (often ABAB)
Dramatic monologue	one speaker/ persona relating their own personal experience alone
Epic poem	long narrative poem about heroic deeds / hero culture
Narrative poem	tells a story with characters
Free verse	no set pattern of stanzas or rhyme, poem is free-flow
Title	first impressions

POET'S INTENTION

- Is this poem written from personal experience? Are they writing about an event, feeling or emotion that they have been through in their life?
- Have they adopted a persona as the speaker of their poem or is the intention that it is read in their voice? Is the speaker of the poem writing in Standard English or deliberately speaking with a distinct voice?
- What social, historical or cultural changes did they experience in their life? Has this shaped the topic of the poem or how they have written about it?
- What were their social or political beliefs? How has this influenced their writing?
- What significant events are you aware of that happened during the time in which they were writing? Can you see this echoed in the poem?
- What overall message do they intend to deliver to the reader? Is there one intended audience?

Health, Safety and Hygiene

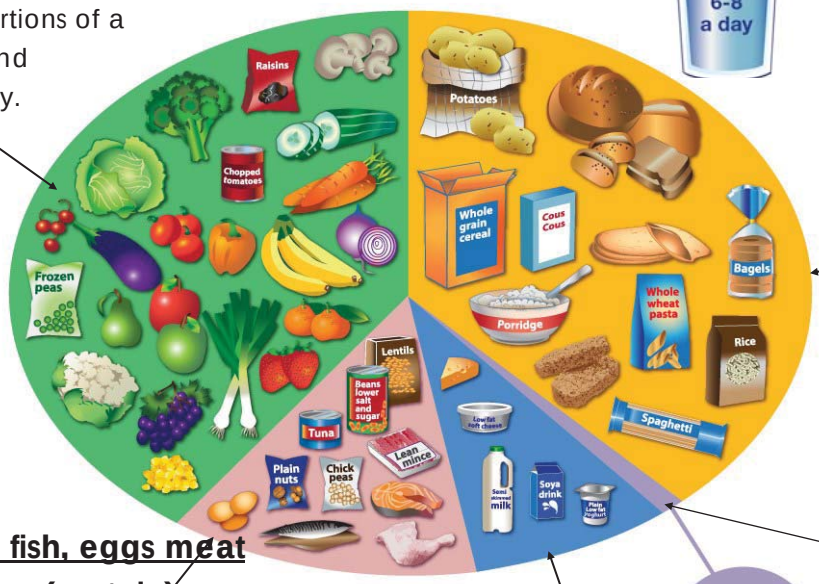
Health, safety and hygiene.

- Always listen to the teacher and follow instructions.
- Do not run in the food room.
- Do not leave bags and blazers where they can get in the way and cause a tripping hazard.
- Walk sensibly around the room when carrying equipment especially knives.
- Always return equipment once its finished with and cleaned especially knives. These will be counted in at the end of every lesson.
- Always listen carefully when the teacher is demonstrating how to use equipment. Make sure you ask questions if you do not understand.
- Take your blazers off and roll up your sleeves when doing a practical lesson.
- Tie your hair back.
- Always wash your hands thoroughly when preparing foods.
- Always use hot soapy water to wash your equipment.
- Make sure all spillages are cleaned up immediately.
- **Always** use an oven cloth when taking food from the oven.

The Eatwell Guide

Fruits and vegetables.

Eat at least 5 portions of a variety of fruits and vegetables a day.



Drinks.

6-8 glasses a day. Water, lower fat milk, sugar free drinks including tea and coffee count.

Potatoes, bread, rice, pasta and other starchy carbohydrates.

Choose wholegrain or higher fibre versions with less added salt, sugar and

Beans, pulses, fish, eggs meat and alternatives (protein).

Eat more beans and pulses, 2 portions of sustainably sourced fish per week, one of which is oily. Eat less red and processed

Dairy and alternatives.

Choose lower fat and lower sugar options.

Oils and spreads (fats).

Choose unsaturated oils and use in small amounts.

Foods high in fats and sugars.

Eat less often and in small amounts.

Preparation Skills and Techniques

Chopping, Slicing, Dicing and Peeling Skills

A

B

C

Bridge Hold

Claw Hold

Peeling

What could happen?

Cake and Pastry Making Methods

Rubbing -in Method

Used for pastry and cakes that **do not have a large amount of fat** compared to flour

- Fat is **cut into chunks** (block margarine is best)
- Air is trapped when sieving the flour and by lightly **rubbing the fat in to the flour**
- Any optional ingredients (e.g. sultanas) are **added before the liquid or egg** that binds the crumb together

Creaming Method

Used for cakes containing **more fat and sugar** compared to flour

- The fat and sugar are **creamed together** using a **wooden or plastic spoon**. Air is **trapped** by **creaming** the sugar and fat together
- Soft margarine is better as it is **easier to cream**
- **Caster sugar** has **smaller crystals** than **granulated** so it **traps more air** and mixes better
- **Self raising flour** is used to make the cakes **rise**

Melting Method

-Fat is melted with the sugars and syrup

-Dry ingredients added

-Liquids bind all ingredients together

Year 9 French - Cycle 1

	French	English
Week 1	Nous devons faire le stage à la piscine car la directrice est sportive.	We must do work experience at the swimming pool because the Headteacher is sporty.
Week 2	Les collègues de cette entreprise ne veulent pas avoir d'attitude négative .	The colleagues of this company don't want to have a negative attitude.
Week 3	Je connais les gens québécois car ils savent la chanson canadienne.	I know the people from Quebec because they know the Canadian song.
Week 4	Je mets l'habitant près du lac, et tu mets l'habitante près du fleuve.	I put the male resident near the lake, and you put the female resident near the river.
Week 5	Je ne remets jamais le sac.	I never put the bag back.
Week 7	Il faut respecter le château car c'est historique.	It is necessary to respect the castle because it is historic.
Week 8	Je crois en Dieu car je suis chrétien, mais mon ami est musulman.	I believe in God because I am Christian, but my friend is Muslim.
Week 9	La laïcité soutient la liberté d'appartenir à une foi si vous voulez.	Non-religiousness supports the freedom to belong to a faith if you want.
Week 10	À Noël, il y a du bonheur dans l'air et on prend un long repas.	At Christmas, there is happiness in the air and we have a long meal.

Each week you will need to practise and learn your **Sentence of the Week** as well as your **Vocabulary of the Week**. For your **Vocabulary of the Week** also pay attention to which type of words they are:

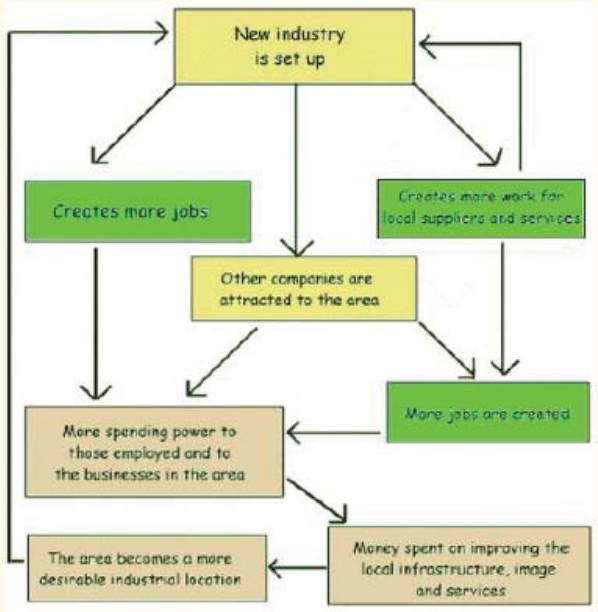
Verbs are in **VIOLET**
Feminine nouns are in **PINK**
Masculine nouns are in **BLUE**
Adjectives are in **AMBER**

Week 1		Week 2		Week 3		Week 4		Week 5	
nous devons	we must/have to	nous savons	we know how to/ are knowing how to	je connais	I am familiar with/know	perdre	to lose/losing	remettre	to put back/ putting back
vous devez	you (formal/pl) must/ have to	vous savez	you (formal/pl) know how to/are knowing how to	tu connais	you are familiar with/ know	mettre	to put/putting	je remets	I put back/ am putting back
ils/elles doivent	they must/have to	ils/elles savent	they know how to/ are knowing how to	connaître	to be familiar with/know	je mets	I put/am putting	tu remets	you put back/ are putting back
nous pouvons	we can/are able to	nous voulons	we want to/are wanting to	savoir	to know how to/know	tu mets	you put/are put-ting	il/elle remet	he/she puts back/ is putting back
vous pouvez	you (formal/pl) can/ are able to	vous voulez	you (formal/pl) want to/ are wanting to	les gens (mpl)	people	il/elle met	he/she puts/is putting	le sac	bag
ils/elles peuvent	they can/are able to	ils/elles veulent	they want/are wanting to	le chemin	way, path	l'habitant (m)	resident (m)	la campagne	countryside
la piscine	swimming pool	le collègue	colleague (m)	l'endroit (m)	place, spot	l'habitante (f)	resident (m)	la province	province
le directeur	headteacher, manager (m)	la collègue	colleague (f)	le groupe	group	le fleuve	river	la population	population
la directrice	headteacher, manager (f)	l'attitude (f)	attitude	le Canada	Canada	le lac	lake	ne…jamais	never, not ever
le stage	work experience	l'entreprise (f)	company	la chanson	song				
actif	energetic (m)	positif	positive (m)	le Québec	Quebec				
active	energetic (f)	positive	positive (f)	québécois	from Quebec (m)				
sportif	sporty (m)	négatif	negative (m)	québécoise	from Quebec (f)				
sportive	sporty (f)	négative	negative (f)	canadien	Canadian (m)				
il faut + infinitive	it is necessary + verb/ must + verb			canadienne	Canadian (f)				

Week 6	Week 7		Week 8		Week 9		Week 10	
Revision week of all vocab learned this cycle	empêcher	to prevent/preventing	croire	to believe/believing	appartenir à	to belong to/belonging to	contenir	to contain/containing
	pratiquer	to practise/practising	je crois	I believe/am believing	soutenir	to support/supporting	vers	towards
	respecter	to respect/respecting	tu crois	you believe/are believing	la laïcité	non-religiousness	l'air (m)	atmosphere., feeling
	risquer	to risk/risking	il/elle croit	he/she believes/ Is believing	la liberté	freedom	le bonheur	happiness
	le château	castle	chrétien	Christian (m)	le dieu	god	le symbole	symbol
	la région	region	chrétienne	Christian (f)	la foi	faith	le souvenir	memory
	essentiel	essential (m)	juif	Jewish (m)	européen	European (m)	le vent	wind
	essentielle	essential (f)	juive	Jewish (f)	européenne	European (f)	l'Afrique (f)	Africa
	fantastique	fantastic	musulman	Muslim (m)	religieux	religious (m)	l'Asie (f)	Asia
	historique	historic	musulmane	Muslim (f)	religieuse	religious (f)	l'Europe (f)	Europe
	utile	useful					il est + time	it is + time
							fort	strong (m)
							forte	strong (f)
							long	long (m)
							longue	long (f)

Year 9 - Geography- Cycle 1	Week 1 – Features of a Superpower	Week 2– Features of a Superpower
Key vocabulary **Superpower:** A state or organisation that can extend a dominant influence globally (e.g., the USA). **Globalisation:** The increasing links between countries around the world as a result of the movement of goods, services and money. **Economy:** The wealth & resources of a country in terms of the goods that are produced and consumed there. **Trade:** The activity of buying, selling or exchanging goods and services between people, business or countries. **Soft power:** Power through favour or persuasion (e.g. film, food). **Transnational corporation (TNC):** A business that is found in more than one country e.g. McDonalds. **Sustainable:** Meeting the needs of the present without compromising the ability of future generations to meet their needs.	**Features of a superpower** **Physical size & location:** Larger countries have more resources and influence. However, more bordering countries can create more tensions e.g. Russia. **Economic power & influence:** Top 10 largest economics earn 65% of the global GDP (wealth). Attract investments and creates global hubs e.g. London. Dollar and Euro are powerful currencies. **Political:** Political groups such as the G7 and OECD work with others to improve countries. **Cultural influence:** TNCs such as Coca-Cola, McDonalds, Disney and Sony influence people's lifestyles around the world.	**Features of a superpower** **Population:** Large population can create a sufficient labour force. China and India have large populations for cheap labour. Can also lead to large markets (people to buy products). **Military strength:** Historical influence on determining power. China has largest military followed by USA. **Natural resources:** Oil, gas and coal for energy and metals like iron ore for the steel industry are essential to development. Does not guarantee development though; some countries are unable to access them.
Week 3 – Emerging Powers	**Week 4 – Emerging Powers**	**Week 5 – Fast Fashion**
Emerging powers – BRICs **Emerging power:** A state or organisation that is growing significantly in power and beginning to extend a more global influence. **BRICs:** Brazil, Russia, India, China. Brazil has huge natural resources and self-sufficient in both food and energy. It is an agricultural superpower: third largest producer of iron ore, third largest of HEP. Brazil is infamous for deforestation in the rainforest as well as poaching and pollution.	**Emerging powers – MINTs** **MINTs:** Mexico, Indonesia, Nigeria, Turkey Mexico is neighbour to the USA. It is estimated that it's GDP will be $6.95 trillion by 2050. It has a history of corruption in the government but becoming more democratic. Indonesia has the largest population of the MINT countries – fourth most populated in the world. Good connections with China. The country is made up of 17,000 islands and many are prone to earthquakes and tsunamis. Turkey is situated in both the West and the East. Youthful population with good education levels.	**Impacts of fast fashion** Kazakhstan affected by cotton production – in the 1960s, the Aral Sea covered 68000 sq km. It was one of the largest inland seas with a thriving fishing and tourist industry. It has now all but gone. One of the rivers that fed the Aral Sea – Amu Darya – was diverted to cotton-production farms. Caused seasons to change. No water to absorb heat and keep the climate mild. Summers now as hot as 45°C! On the banks of the Citarum River there are over 400 factories. Tests of the river water found toxic levels of mercury, cadmium, lead and arsenic.

Multiplier Effect



Week 6 – South China Sea

South China Sea

China, Vietnam, the Philippines, Taiwan, Malaysia and Brunei all have competing claims to the South China Sea.

China believes that it owns the largest portion of the territory – the sea within the 'Nine-dash-line'.

China has been building islands with military bases in the Sea, creating more 3,200 acres of new land.

The USA, who has allies with some of the countries above, relies on the shipping route through the Sea for trade.

The USA sent military ships and planes to monitor the region.

Although the islands are uninhabited, they have nave natural resources around them.

Week 7 – Shell in Nigeria

Shell (TNC) in Nigeria

Advantages:

- 250,000 are employed as a result of the extraction of oil with 65,000 being directly employed by Shell.
- 91% of all contracts are with Nigeria which means money stays in the country.
- The government benefits from export taxes, providing money that can be spent on improving education, healthcare and services.
- Local people's education and skills can be improved.

Disadvantages:

- 75% of people in the delta have no access to safe drinking water.
- 9mn barrels have been split in 5 yrs. This damage the agriculture and water supplies.
- Oil flares and toxic fumes have increased air pollution.
- Few of the managers are local people.
- Locals are paid low wages, poor working conditions and long hours.

Week 8 – India Space Race

India's Space Race

Criticised for spending money on a space project when nearly 25% of its population live below the poverty line. India's space programme costs roughly $1 billion a year.

Satellites improve data on monsoons rains and weather patterns, helping farmers get a better idea of when to plant crops.

India is reducing poverty quickly, with 44 people lifted from poverty every minute.

40% of children are malnourished and half the population have no toilets.

The sector would employ highly-skilled workers from the country's universities.

Week 9 – China in Africa

Role of China in Africa

Colonialism: The gaining of political control over a territory by another country e.g. British Empire.

Neo-colonialism: The use of economic, political and cultural power to influence other countries (e.g. China's interest in the African continent).

Chinese officials say they are playing a constructive role in helping countries in Africa to develop.

China issued over $84 billion in loans to finance thousands of infrastructure projects in Africa.

President Xi Jinping stresses that their investment in Africa comes with no strings attached.

Week 10 – China in Laos

China in Laos

Laos is a landlocked country of 7.4 million people in SE Asia.

China has invested in transportation infrastructure, hydropower dams, schools and military hospitals, indicating growing ties with Laos.

Laos has the Mekong River running through it, making hydropower a big industry. It has underdeveloped resources including minerals and rubber.

Boosting connectivity via roadways and high-speed passenger and freight railways will help China to distribute its goods.

The China-Laos railways is an example of one of China's Belt and Road Initiatives.

Will the First World War be forgotten?

What caused the First World War?

- No one is still alive that fought in the First World War, as we get further and further away from the event is it going to be forgotten by people in Britain?
- Between 1914 and 1918, a war was fought that was unlike any before it.
- The "Great War" as it was known at the time, used modern, industrial weapons such as artillery guns.
- In July 1914, the empires of Britain, France, and Russia (known as the "Entente" alliance) went to war against Germany and Austria-Hungary (known as the "Central Powers").
- Later in the war, the Ottoman Empire, Italy, and the USA joined in too and so the whole world seemed to be at war.
- The long-term causes of the war include militarism, alliances, imperialism, and nationalism.
- The European countries became more aggressive towards each other, they built up their armed forces, and made secret deals to support other nations. All that was needed was a spark to trigger a war.
- The short-term cause of the Great War was Franz Ferdinand being assassinated by Gavrilo Princip and the Black Hand Gang in Sarajevo.

Give examples of evidence that historians can use to learn about the War.

- The war was fought using "trench warfare" on the Western Front, Eastern Front, in Gallipoli, and in the deserts of the Middle East.
- There were also battles at sea such as Jutland.
- The artefacts from these battle zones provide evidence of the Great War. Shrapnel, artillery, barbed wire, machine guns, magazine loaded rifles, and grenades all provide evidence about the war and the trench warfare.
- Soldiers who fought in the Great War wrote letters home, poetry, and articles, whilst they were serving in the armed forces.
- Any soldiers who were injured also have medical records about their treatment.
- Newspapers also printed stories about what was happening in the war.
- The British government wanted to keep people happy during the war, so they controlled what the media could say and they even changed soldiers' letters.
- These contemporary Sources are very useful as evidence for Historians as long as they compare them and remember that some may have been changed.

Why do the interpretations of the First World War sometimes differ?

- Many of the people who lived through the Great War wrote books or did interviews about what they experienced.
- This contemporary evidence has been used by historians to create their interpretations of the events.
- Historians' conclusions differ depending on their point of view and the different evidence they use.

HISTORIAN SKILLS

- Knowledge
- Explanation
- Using Sources
- Interpretation

KEYWORDS

Biased = one sided
Contemporary = from the time
Interpretation = version of events
Reliable = trustworthy
Source = piece of evidence
Militarism = building up armed forces
Alliances = making deals between countries
Imperialism = European countries taking over other places.
Nationalism = love for a country

IMPORTANT DATES

1903 = first German Submarine built
1906 = first Dreadnought ship launched
1914 28th June = assassination of Franz Ferdinand
1914 28th July = war begins
1915 Feb = Gallipoli landings
1915 Apr = poison gas used for the first time in the war
1916 Feb-Dec = Battle of Verdun
1916 May = Battle of Jutland
1916 July-Nov = Battle of the Somme
1916 Sep = first tank used in the war
1917 June = Sidcup hospital opened
1918 Apr = RAF set up
1918 11th Nov = armistice
1919 = Treaty of Versailles

FAMOUS SOURCE

Nature = a poem called "Dulce Et Decorum Est" (How Sweet and Right it is)
Origin = written in 1918 by Wilfred Owen
Purpose = to express his feelings about the War

Wilfred Owen was a soldier on the Western Front. He was awarded a medal for bravery after taking a German machinegun post. He suffered from "shell shock" during the war and he was treated in an Edinburgh hospital for "exhaustion"; writing poetry was part of his treatment.


DULCE ET DECORUM EST.

Did violence win women the vote?

1. How were British women treated differently from men before 1900?

- By 1800, women in Britain were not equals with men. Women could not own property or a business, and they had to be looked after by their father, uncle, brother, or husband.
- In 1832, women asked Parliament to give them the vote but Parliament refused.
- They tried again in 1866, to convince Parliament to give women the vote, but again they were refused.
- In 1870, female campaigners had some success by changing the law so that women could own property and money (but only if they were married).
- In 1894, the government allowed women to vote in local council elections. But this was still not full equality with men, so the women continued to campaign for the vote nationally.

2. In what ways did the NUWSS try to win the vote?

- In 1897, the National Union of Women's Suffrage Societies (NUWSS) was formed, led by Millicent Fawcett.
- Their tactics included speeches, dinner parties, marches, poetry, posters, and petitions.
- The NUWSS members became known as the Suffragists.
- In 1902, the NUWSS asked Parliament again to change the voting law and again they refused.

3. What tactics did the WSPU use to win the vote?

- Some women were getting frustrated with the lack of progress, so they created a more radical group called the Women's Social and Political Union (WSPU) in 1903.
- They adopted the motto "Deeds not Words" and they were led by Emmeline Pankhurst and her daughters.
- The WSPU became known as the "Suffragettes" and their tactics were sometimes violent. They used hammers to smash windows, they threw fruit and vegetables at politicians, and they cut paintings in art galleries.
- The Suffragettes became more violent and began using arson attacks, letter bombs, and throwing bricks through politicians' windows.
- When the Suffragettes were arrested they went on hunger strike in prison.
- One Suffragette called Emily Wilding Davison even died protesting in 1913 by throwing herself in front of a horse during a race.

4. What did the Suffragettes do during the First World War?

- When the First World War began in 1914, the Suffragettes called off their campaign and helped the war effort by working on the land as farmers, or in the towns in factories and other jobs left by men sent to war.
- After the War, Parliament gave the vote to women over 30 years old who owned homes.

HISTORIAN SKILLS

- Knowledge
- Explanation
- Using Sources
- Interpretation

KEYWORDS

Merchandise = products
Motto = a saying or phrase that sums up the beliefs of a group
Parliament = the group of MPs that make new laws
Petition = list of signatures
Protest = state your views
Publicity = media attention
Strike = refuse
Suffrage = be able to vote

IMPORTANT DATES

1832= suffrage petition
1866= suffrage petition
1870= married women can legally own property
1894= woman can vote in local council elections
1897= Suffragists formed (NUWSS)
1902= suffrage petition
1903= Suffragettes formed (WSPU)
1905= "Deeds not words" motto
1909= Hunger strikes begin
1912= Fire bombing of churches
1913= Emily Wilding Davison dies
1913= Letter bombs used
1914= First World War begins
1917= Women's Land Army formed
1918= Women over 30 can vote
1919= Nancy Astor becomes an MP

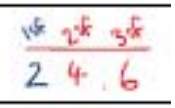
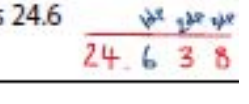
FAMOUS SOURCE

Nature = a poster, sometimes made into a miniature postcard
Origin = made in 1910 by the WSPU (Suffragettes)
Purpose = Designed to make the British public feel sorry for the hunger strikers in jail. It shows a very dramatic version of the force feeding of women in prison who went on hunger strike.

Creating Interactive Digital Media

Interactive digital media products are found across the media industry in games, websites and apps, learning platforms, simulations and in commerce. The content of these products have been designed to create an immersive and engaging environment which can promote, educate, entertain, inform or influence. Digital design skills will enable students to design and create interactive digital media products that meet a given client brief and appeal to an identified target audience whilst developing industry standard IT skills.

Topic of Learning	I will need to know:	So that I can:
Types of interactive digital media, content and hardware	There are many different types of interactive digital media products, websites, information points, mobile apps, e-learning products, digital maps and games. The format of the media product is determined by the purpose of the product and the target audience. The content of media products include images, audio, video, animation text, tables, lists, forms, navigational buttons, maps and layers. Different hardware is used to access media products. Examples include computers, games consoles, kiosks, mobile phones, smart TV and tablets.	Identify the purposes of different interactive media products and their target audience.
Features and conventions of interactive digital media	The features of media design includes a graphical user interface (GUI) consistent layout, colour scheme, house style, typography selection and white space. Interface and interaction styles include click, touch, voice control, motion, drag, drop and feedback. Conventions of digital media include non-linear navigation, user friendly intuitive interfaces and accessibility for target audiences.	Understand what makes an effective GUI in order to create different types of interface when creating digital media products.
Resources required to create interactive digital media	The hardware used to create digital media, includes computer, mouse, stylus, monitor, graphics tablet, touch screen, microphone and digital camera. Software used to create digital media, includes web authoring software, app creation, video editing, image editing and animation software.	Identify the most appropriate hardware/ software to use when creating digital media products.
Planning documentation and techniques	Before creating a digital product, the product needs to be planned. Pre-production documents created are wire frames, storyboards, navigation diagrams, mind maps, mood boards, master page templates and interactivity designs.	Understand the importance of planning a digital media product before it is created.
Technical skills needed to create digital media products	There are many technical skills required to create digital media products. Skills include, advanced searching, selecting appropriate image types eg bitmap or vector, adjusting image size, canvas size, applying filters, retouching and layering. When repurposing video, tools used include cut, split, trim, extend, optimise file size, volume editing, enhancing sounds. When creating animations, tools used will include frames, onion skinning and motion tween.	Use a range of technical skills to create effective digital media products.

Word	Used in context	Definition	Example
Integer	*Round 24.6 to the nearest* ***integer****.*	A whole number.	3, 15, −4, 0, −323
(Rounding to) Significant Figures (Sig. Fig.)	*Round 24.6 to one* ***significant figure***	Rounding to the most meaningful digits.	24.6 to 1 sig. fig. is 20 
(Rounding to) Decimal Places (d.p.)	*Round 24.638 to one* ***decimal place.***	Rounding to a certain number of digits after the decimal place.	24.638 to 1 d.p. is 24.6 
Estimate	***Estimate*** *the value of* 63 + 27	To find a value that is close to the right answer, usually by rounding numbers to 1 sig. fig. first.	$63 + 27 \approx 60 + 30 = 90$
Prime	*Which of the following numbers are* ***prime****?*	A number with exactly two *different* factors; one and itself.	2: 1, 2; 3: 1, 3; 5: 1, 5
Factor	*1, 2, 3, and 6 are all the* ***factors*** *of 6.*	Any integer (whole number) that divides exactly into another number,	6: 1, 6, 2, 3; 20: 1, 20, 2, 10, 4, 5
Multiple	*List the first five* ***multiples*** *of 4.*	Any integer (whole number) in the times table of another number.	Multiples of 4: 4, 8, 12, 16, 20
Lowest Common Multiple (LCM)	*Find the* ***lowest common multiple*** *of 6 and 9.*	If you list the multiples of these numbers, the lowest common multiple is the smallest number that can be found in both lists.	6, 12, 18, 24, 30, 36; 9, 18, 27, 36; LCM (6,9) = 18
Highest Common Factor (HCF)	*Find the* ***highest common factor*** *of 15 and 33.*	If you list the factors of these numbers, the highest common factor is the largest number that can be found in both lists.	15: 1, 15, 3, 5; 33: 1, 33, 3, 11; HCF (15, 33) = 3
Prime factor decomposition **Product of prime factors**	*The* ***prime factor decomposition*** *of 52 is:* *2 x 2 x 13* *Write 52 as a* ***product of its prime factors****.*	Each number has a unique prime factor decomposition, just like a signature. Multiply prime numbers only to make the number.	52 = 2 × 2 × 13
Indices (pl.) / Index (sing.)	*Express* 3 × 3 × 3 × 3 *in* ***index*** *form.*	A number which shows how many times a number or letter has been multiplied by itself.	$3 \times 3 \times 3 \times 3 = 3^4$

Word	Used in context	Definition	Example
Origin	*Draw a line that goes through the **origin**.*	The origin is the co-ordinate (0,0).	
Gradient	*The line has a positive **gradient** and that **gradient** is 3.*	The measure of how steep a line is. Represented by an 'm' in the general form $y = mx + c$	$gradient = \frac{change\ in\ y}{change\ in\ x}$
y-intercept	*Find the **y-intercept** of the graph.*	Where a straight line graph crosses the y-axis. Represented by 'c' in the general form $y = mx + c$	
Term	*In the expression $4x - 7$, $4x$ is the **x-term** and 7 is the **number term**.*	A single number or variable (letter).	$4x$ -7 x^2 $-xy^2$
Collect like terms	***Collect** the **like terms** in the expression $2x + 5 + 7x + 2$*	Collecting together terms whose variables are the same.	$2x + 5 + 7x + 2 \rightarrow 9x + 7$
Co-efficient	*The **co-efficient** of $5x^2$ is 5.*	A number used to multiply a variable. Variables with no number have a co-efficient of 1.	$7x$ -> The co-efficient is 7
Expression	*$5x - 3y + 2$ is an **expression**.*	Numbers, symbols and operators (such as + and × grouped together.	
Expand	***Expand** the bracket $2(x + 5)$.*	To remove a bracket by multiplying terms.	$2(x+5) = 2x + 10$
Factorise	***Factorise** the expression $2x + 10$*	Finding what to multiply together to get an expression.	$2x + 10 = 2(x + 5)$
Substitute	***Substitute** the value $x = 2$ into the expression $5x - 1$*	Replacing the variables (letters) with numbers.	$3x$ $x = 2$ $3 \times 2 = 6$
Linear Sequence	*The sequence 4, 7, 10, 13, 16 is a **linear sequence**.*	A number pattern which increases (or decreases) by the same amount each time.	10, 9, 8, 7, 6,... -2, 1, 4, 7, 10,...
Term (in a sequence)	*In the sequence, 2, 4, 6, 8, the number 4 is the second **term**.*	Each number in a sequence is called a term.	
Term-to-term	*In the sequence 1, 3, 5, 7, 9, the **term-to-term** rule is to add 2 to the previous term.*	A rule used to allow you to find the next number in a sequence if you know the previous term or terms.	
n^{th} term	*Then **nth term** rule for a sequence is $3n + 1$.*	A position-to-term rule that works out a term based in its position in the sequence.	4, 7, 10, 13 (+3 +3 +3) $4 - 3 = 1$ n^{th} term $= 3n + 1$

Phases of a Sports Activity Session– **TASK 1–** Read the text below. Identify the different phases and briefly describe their purpose.
TASK 2– Create an example warm up to last five minutes. **TASK 3–** Create an unopposed practice to work on a skill of your choice. Use a diagram and describe how to do the practice. Give two ways it could be made easier or harder. **TASK 4–** Create an opposed practice with opposition. What are the main teaching points? **TASK 5–** Create a small sided game with some conditions to target a certain skill or tactic.

Warm Up	Should include a **pulse raiser** to gradually increase blood and oxygen supply to the working muscles. **Stretches and joint mobilisation** to increase the elasticity of muscles and ensure that joints are prepared for full movement. Skills practice to ensure that players have practiced key skills or movements linked to their game..
Unopposed practice	A practice aimed at developing skill or technique with **no pressure from defenders.** Example– Passing the ball around a square. Shooting in basketball without a defender.
Opposed practice	A practice where there is **pressure from defenders**. More decisions have to be made and this is more realistic. Example– 3 vs 1 keep ball, 4 vs 2 keep ball.
Small Sided Game	A game which is conditioned to **focus on certain skills or tactics**. Changes can be made to the Space (playing area), Task or amount of players to help this. Example– Line ball– players can only score by dribbling over a line to focus on dribbling past a defender.
Cool Down	**Gradually reducing pulse and breathing rate**, also stretching key muscle groups. Aim to remove waste products and reduce chance of muscle soreness.

Risk Assessment– **TASK 6–** Use the template below to create a Risk Assessment with at least five possible hazards. This is for an activity (i.e. Football, Basketball) and where the activity that it will take place in (e.g. AstroTurf/Sports Hall).

Identify significant hazards	State the **severity** of the hazard (high, medium, low)	State the **probability** of the hazard happening (high, medium or low)	List the people at risk from the hazard	List what could be done to reduce the risk of hazard and any actions needed.
Litter	Medium– possible risk of cuts or slipping/tripping	Medium– litter might be seen by the student so they avoid it.	Students and coaches	Pick the litter up before the session. No food or drinks to be brought into session.

Teaching Points– **TASK 7–** Identify three teaching points for a skill of your choice. Break down the points into preparation, execution and outcome (see support below).

Examples: Set Shot (Basketball), Short Pass (Football), Chest Pass (Netball), Backhand Push (Table Tennis)

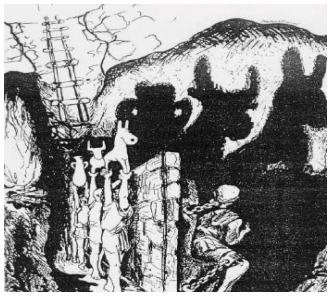
Preparation	Execution	Outcome
• How the **body is positioned** before performing the skill.	• How the **body moves** from starting and finishing action.	• The end goal/product of the performance.

1. What is a philosophy? (part 1)

The most general definition of philosophy is that it is the **pursuit of wisdom, truth, and knowledge.** Indeed, the word itself means 'love of wisdom' in Greek. Philosophical thinking is found in **all parts of the world, present, and past.**

The Allegory of the Cave is a philosophical concept accredited to Plato.

Plato's "Allegory of the Cave" is a concept devised by the philosopher to ruminate on the nature of belief versus knowledge. The allegory begins with **prisoners who have lived their entire lives chained inside a cave**. Behind the prisoners is a fire, and between the fire and the prisoners are people **carrying puppets or other objects**. These cast shadows on the opposite wall. The prisoners watch these shadows, **believing this to be their reality** as they've known



2.What is philosophy? (part 2)

Plato posits that **one prisoner could become free.** He finally sees the fire and realizes the shadows are fake. This prisoner could escape from the cave and discover there is a **whole new world outside t**hey were previously unaware of.

This prisoner would believe the outside world is so much more real than that in the cave. **He would try to return to free the other prisoners.** Upon his return, he is blinded because his eyes are not accustomed to actual sunlight. The chained prisoners would see this blindness and believe they will be harmed if they try to leave the cave.

Whereas Plato believed an ultimate reality existed beyond this world, accessible only through reason, Aristotle used the empirical method in order to **explain the world around him - via analysis of the FOUR CAUSES:** example of the bronze statue (material cause is bronze, formal cause is its shape, efficient is the means it came about e.g. statue maker, and it final cause e.g. honouring the Gods) empirical method is clear and observable!

3. The Cosmological Argument for the existence of God (part 1)

First cause argument (cosmological argument). **St Thomas Aquinas (1225 – 1274)** developed the most popular argument as a 'way' (not proof) of showing that there must be a God.

Aquinas argued that **everything in the cosmos has a cause**. If you track things back through a series of causes, there must have **been a 'first cause'.** He said that this **'first cause' is God,** whom he described as a 'necessary being', eternal and transcendent, existing outside of our space and time but able to act within it, needing no explanation and having no cause.

Criticisms:

If the argument is based on the idea that everything has a cause, then this leaves open the question 'Who or what caused God?' To reply that God needs no explanation is not enough to prove God's existence.

The Big Bang was not necessarily caused by God – it could have happened by chance.

4. The Design Argument (part 1)

Design argument (teleological argument)

St Thomas Aquinas (1225 – 1274) argued that the apparent order and complexity in the world is proof of a designer and that this designer is God.

William Paley (1743 – 1805) argued that the complexity of the world suggests there is a purpose to it. This suggests **there must be a designer**, which he said is God.

Paley used a watch to illustrate his point. If he came across a **mechanical watch** on the ground, he would assume that its many complex parts fitted together for a purpose and that it had not come into existence by chance. **There must be a watchmaker.**

5. The Design Argument (part 2)

Criticisms:

Complexity does not necessarily mean design. Even if we accept that the world was designed, **it cannot be assumed that its designer is God.** And if it were designed by God, then the existence of evil and suffering in the world would suggest that the belief that God is all-good is false.

The theory of **natural selection**, put forward by **Charles Darwin**, shows a way of understanding how species develop without reference to a designer God.

6. The argument from miracles (part 1)

Miracles have traditionally been taken as validations of religious claims. If the Bible is to be believed, then Jesus' ministry was accompanied by miraculous signs and wonders that testified that it was God working through him. His **resurrection from the dead was the greatest of these miracles,** and is still frequently taken today to be a **solid reason for believing in the existence of God.**

According to **Hume,** no matter how strong the evidence for a specific miracle may be, it will always be **more rational to reject the miracle than to believe in it.** Hume noted that there are two factors to assess in deciding whether to believe any given piece of testimony: **the reliability of the witness and the probability of that to which they testify.**
The testimony of a witness that is both honest and a good judge of that to which they testify is worth much. The testimony of a witness who is either dishonest or not in a position to know that to which they testify is worth little. The reliability of the witness is therefore something that is to be taken into account in deciding whether to believe.

7. The problem of evil

Some philosophers prefer to question whether the concept of God makes any sense. The Problem of Evil/Suffering asks whether it makes sense to propose that there is a good and all-powerful being presiding over a world with evil and suffering in it - evil and suffering which **God *could* prevent and *wishes* to prevent, but either *does not* or *cannot* prevent.**

Augustine advanced the most famous version of the **soul-deciding theodicy** that is still widely accepted today by many Catholics and Protestants. Soul-deciding theodicies argue that God's creation is essentially GOOD, yet free-willed souls have introduced evil into it through their own decisions to sin.

Irenaeus; becoming ***"in God's likeness"*** is different. It's not automatic. It takes effort and willpower. It involves overcoming your own selfishness and pride, putting others first, developing the courage to stand up for what's right and resisting temptations to violence, bitterness or greed. Because we are all in the image of God, becoming "*in God's likeness*" is possible for every human, but some humans don't get very far towards it.

8. Situation ethics

In situation ethics, right and wrong depend upon the situation. There are no universal moral rules or rights - **each case is unique and deserves a unique solution**. Situation ethics rejects 'prefabricated decisions and prescriptive rules'. It teaches that ethical decisions should **follow flexible guidelines** rather than absolute rules, and be taken on **a case by case basis**.

So a person who practices situation ethics approaches ethical problems with some general moral principles rather than a rigorous set of ethical laws and is prepared to give up even those principles if doing so will lead to a greater good.

9. Utilitarianism

The classic form of results-based ethics is called utilitarianism.

This says that the ethically right choice in a given situation is **the one that produces the most happiness and the least unhappiness for the largest number of people.**

Results-based ethics plays a very large part in everyday life because it is simple and appeals to common sense:

- It seems sensible to base ethics on producing happiness and reducing unhappiness
- It seems sensible to base ethics on the consequences of what we do, since we usually take decisions about what to do by considering what results will be produced
- It *seems* easy to understand and to be based on common sense.

10. Ethical response to abortion

Utilitarians would ask whether having an abortion brings about the greatest good. Having an abortion because of financial pressures, other family members' needs, education, work - any of these reasons may be justified by the hedonic calculus.

The Christian idea that God created us, instructed us to reproduce etc. Seen in this light, Situation Ethics will start from the belief that it is generally in our interests to create families, nurturing and educating our children. However, in exceptional circumstances the situation might demand a different, loving response.

All substances are made of **atoms**. An atom is the smallest part of an element that can exist.

Atoms of each element are represented by a chemical symbol, eg. O represents an atom of oxygen, Na represents an atom of sodium. There are about 100 different elements. **Elements** are shown in the periodic table.

1

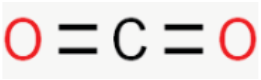
Compounds are formed from elements by chemical reactions. Chemical reactions always involve the formation of one or more new substances, and often involve a detectable energy change. Compounds contain two or more elements **chemically combined** in fixed proportions and can be represented by formulae using the symbols of the atoms from which they were formed. Compounds can only be separated into elements by chemical reactions.

A **mixture** consists of two or more elements or compounds **not** chemically combined together.

A **molecule** is the smallest particle in a chemical element or compound that has the chemical properties of that element or compound, it is like the recipe for that molecule to exist in real life. **Molecules** are made up of atoms that are held together by chemical bonds. Some examples: O_2 represents 2 atoms of oxygen (the oxygen we breathe), O_3 represents 3 atoms of oxygen (ozone) and H_2O represents 2 atoms of hydrogen and 1 atom of oxygen (water).

Enquiry Task

1. Describe the differences between elements, compounds and mixtures
2. How can elements be turned into compounds?
3. Draw the molecule, identify each of the atoms and state the compound.



Chemical reactions can be represented by **word** equations or equations using **symbols and formulae**. Students will be supplied with a periodic table for the exam and should be able to:

1

- use the names and symbols of the first 20 elements in the periodic table, the elements in Groups 1 and 7, and other elements
- name compounds of these elements from given formulae or symbol equations
- identify both the reactants and the products in an equation
- write word equations for the reactants and the products
- write formulae and balanced chemical equations for the reactions

A reaction between sodium and chlorine produces sodium chloride and is written like this:

word equation: sodium + chlorine → sodium chloride
symbol equation: Na + Cl → NaCl
balanced equation: 2Na + Cl_2 → 2NaCl

Simple steps to balance equations:

1. Write out the equation
2. Draw a box around each of the molecules
3. Draw a line down from the reaction arrow to separate the reactants from the products
4. Write out the element for the reactants
5. Copy these elements on the products side in the same order
6. Count the atoms on each side
7. Add balancing numbers outside the boxes (BIG numbers in front of the molecules only)
8. Recount the atoms on that side every time you change a number
9. Eventually the equation will be balanced.

Enquiry Task

1. Using your periodic table write 3 equations of your choice.
2. Now write the symbol equations for each and try to write a balanced equation.

See Mrs Tuft for help.

A **mixture** consists of two or more elements or compounds **not** chemically combined together. The chemical properties of each substance in the mixture are unchanged.

2

Mixtures can be separated by **physical processes** such as filtration, crystallisation, simple distillation, fractional distillation and chromatography. These physical processes do not involve chemical reactions and no new substances are made.

Filtration is the process of separating suspended solid matter from a liquid, by causing the latter to pass through the pores of some substance, called a filter. The liquid which has passed through the filter is called the **filtrate**.

Crystallisation is the process by which a solid forms, a crystal. Some of the ways by which crystals form are by evaporation of the solvent forming a solid from a solution, freezing, or more rarely deposition directly from a gas.

Distillation heats a liquid to boiling point. The liquid evaporates, forming a vapour, which is then condensed back into a liquid and collected. **Distillation** is used to purify compounds in solution or to separate mixtures of solutes because individual compounds have distinct boiling points and will evaporate at different times.

Fractional Distillation is a process used to separate liquids with closer boiling points and is commonly used to separate crude oil. The process doesn't have to be repeated to obtain pure components.

Chromatography is a process of separating out different parts of chemical mixtures using an absorbent material. Different parts of the mixture are caught on the material at different rates because some will dissolve better than others based on size of molecule, solubility, etc.

Enquiry Task

1. Explain how mixtures can be separated using:
   a. Filtration
   b. Crystallisation
   c. Simple Distillation
   d. Fractional Distillation
   e. Chromatography
2. Explain the difference between simple distillation and fractional distillation.
3. Research and describe 5 uses of chromatography in real life.

The understanding of the **model of the atom** has changed significantly over time as new models have been tested and developed. Before the discovery of the electron, atoms were thought to be tiny spheres that could not be divided.

3

The discovery of the electron led to the **plum pudding model** of the atom. The plum pudding model suggested that the atom is a ball of positive charge with negative electrons embedded in it.

The results from the **alpha particle scattering experiment** led to the conclusion that the mass of an atom was concentrated at the centre (nucleus) and that the nucleus was charged. This **nuclear model** replaced the plum pudding model.

Niels Bohr adapted the nuclear model by suggesting that electrons orbit the nucleus at specific distances. The theoretical calculations of Bohr agreed with experimental observations.

Later experiments led to the idea that the positive charge of any nucleus could be subdivided into a whole number of smaller particles, each particle having the same amount of positive charge. The name proton was given to these particles.

The experimental work of **James Chadwick** provided the evidence to show the existence of neutrons within the nucleus. This was about 20 years after the nucleus became an accepted scientific idea.

Enquiry Task

1. Research dates and draw a timeline of the model of the atom.
2. Explain the key changes throughout the timeline of events and the significance for the development and understanding of the model.

The particles in an atom have **relative electrical charges**. These are displayed in the box with the name of the particle and its relative charge.

Name of particle	Relative charge
Proton	+1
Neutron	0
Electron	-1

In an atom, the number of electrons is equal to the number of protons in the nucleus. In other words, the proton charges balance or cancel out the electron charges. This means that **atoms have no overall electrical charge**.

The number of protons in an atom of an element is its **atomic number**. All atoms of a particular element have the same number of protons. Atoms of different elements have different numbers of protons.

4

Enquiry Task

1. Draw a simple model of an atom. Identify where and what each charge will be.

Atoms are very small, they have a radius of about 0.1 nm (1 x 10-10 m). The radius of a nucleus is less than 1/10 000 of that of the atom (about 1 x 10-14 m). Almost all of the mass of an atom is in the nucleus and is made up from the total protons and neutrons.

4

Name of particle	Relative mass
Proton	1
Neutron	1
Electron	Very small

The **relative masses** of protons, neutrons and electrons are shown in the table. Don't get this mixed up with the relative charges.

The **sum of** the protons and neutrons in an atom is its **mass number**. Atoms of the same element can have different numbers of neutrons; these atoms are called **isotopes** of that element.

(Mass number) 23
(Atomic number) 11 Na

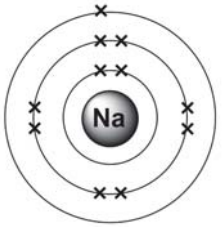
Atoms can be represented as shown in this example.

The relative atomic mass of an element is an average value that takes account of the abundance of the isotopes of the element. Chlorine has two stable isotopes, 75% is Cl^{35} and 25% is Cl^{37}. The **average relative atomic mass** of these isotopes of chlorine is 35.5.

Enquiry Task

1. Draw a table with the headings; name of element, symbol of element, protons, electrons and neutrons. Complete the data for the following elements: Boron, Magnesium, Carbon ^{12}, Carbon ^{14}, Chlorine ^{35}, Aluminium, Iron, Potassium, Phosphorus, Tungsten and Chlorine ^{37}.

The electrons in an atom occupy the lowest available **energy levels** or **shell**. The electrons will always fill the innermost available shells first. The **electronic structure** of an atom can be represented by numbers or by a diagram. For example, the electronic structure of sodium is **2,8,1** or a diagram showing two electrons in the lowest energy level, eight in the second energy level and one in the third energy level.



Enquiry Task

1. Draw the electronic structures for the first 20 elements and write the correct number underneath.

4

The elements in the periodic table are arranged in **order of atomic number** or the proton number. The proton number increases by 1 each time as you go along, eg., H [1], He [2], Li [3], etc.

The table is called a periodic table because similar properties occur at regular intervals.

Elements with similar properties are in columns, known as **groups**. Elements in the same group in the periodic table have the same number of electrons in their outer shell (outer electrons) and this gives them similar chemical properties. For example Li, Na, K, Rb, Cs and Fr are all in Group 1 and so they have just 1 electron in the outermost shell. A Group 5 element will have 5 electrons in the outermost shell.

The horizontal lines of the periodic table are called **periods**. Elements in groups can also show periodicity which means the properties recur in periods. As discussed earlier Li, Na, K, Rb, Cs and Fr have reactions that are similar because they are all in Group 1 but the reactions are stronger as you go down the group. Fr will react much quicker and stronger than Li, as there are more energy shells shielding the nucleus.

Understanding that the periodic table is really important. It is linked to the electronic structure and can help you understand the properties and reactions of the elements. An example of this link can be shown by Silicone. On the periodic table Silicon is in Group 4, so it will have four electrons in the outermost shell. Silicon is on Period 3 and therefore it will have three shells with the outermost shell having four electrons. The electronic configuration will be 2, 8, 4 and so it will have two electrons in the lowest energy level, eight in the second energy level and four in the third energy level.

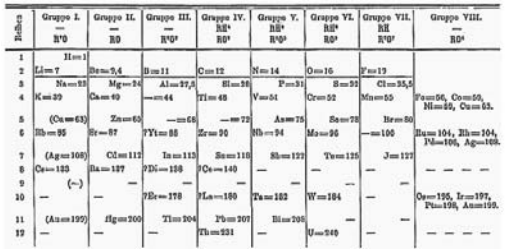
5

Enquiry Task

1. Explain what the group of an element tells us about its electronic structure.
2. Explain what the period of an element tells us about its electronic structure.

Before the discovery of protons, neutrons and electrons, scientists attempted to classify the elements by arranging them in order of their atomic weights. The early periodic tables were incomplete and some elements were placed in inappropriate groups if the strict order of atomic weights was followed. One of the first attempts was made by John Dalton.

John Newlands built on Daltons ideas and recognised that every 8th element showed similar properties. He called this the 'Law of Octaves'. However, not all elements filled this pattern because Newlands did not take into account that some elements had not been discovered and this meant that his Law of Octaves didn't fully work.



Dmitri Mendeleev overcame some of the problems by leaving gaps for elements that he thought had not been discovered and in some places changed the order based on atomic weights. Elements with properties predicted by Mendeleev were discovered and filled the gaps. Knowledge of isotopes made it possible to explain why the order based on atomic weights was not always correct (check out Argon, Potassium and Calcium atomic weights).

6

Enquiry Task

1. Research dates and draw a timeline for the development of the periodic table.
2. Explain the key changes and significance of each person for the development and understanding of the periodic table. What problems did they encounter?

The majority of elements on the periodic table are metals. Metals are found to the left and towards the bottom of the periodic table. Non-metals are found towards the right and top of the periodic table. When you separate the metals from the non-metals you will see a staircase effect. It visually shows you how the elements on each side will probably react. Elements that react to form positive ions are metals. Elements that do not form positive ions are non-metals.

When you do your exams you are given a periodic table.
HINT: 'Step over the Poo as nobody likes to step in Poo!' Find the element Po, draw a line up and over like a staircase to Aluminium.

Enquiry Task

1. Draw a table with the headings metals and non-metals and then add at least 5 different physical properties for each one.
2. Explain why metals form positive ions while non-metals form negative ions. Use diagrams to help.

5

7

The elements in **Group 1** of the periodic table are known as the **alkali metals** and have characteristic properties because of the single electron in their outer shell.

Li
Na
K
Rb
Cs
Fr

Group 1 metals have similar reactions with **water**, **oxygen** and **chlorine**. Your teacher should have demonstrated how Li, Na and K react with water. Can you remember how the metals were stored? They were in brown bottles of oil, inside a plastic container with woodchips in the bottom. They may have shown you the quick oxidation reaction with the oxygen in the air when they cut through the metal. Group 1 metals also react vigorously with chlorine gas producing a metal chloride.

For all of these reactions in Group 1 (with water, oxygen and chlorine), the reactivity of the elements increases going down the group. Other properties follow a similar pattern going down the group. Both boiling point and melting point get lower and lower as you go down the group, for caesium it melts to a liquid at just 29 °C.

Enquiry Task

1. Explain why the alkali metals form ions with a 1+ charge.
2. Explain why are the alkali metals stored in the conditions mentioned.
3. Suggest what products would be formed if caesium reacted with water, oxygen or chlorine. Write down the word and symbol equations for each reaction.

The elements in **Group 0** of the periodic table are called the **noble gases.** They are unreactive and do not easily form molecules because their atoms have stable arrangements of electrons. It is very difficult to get them to form compounds as they have no need to react because the noble gases have eight electrons in their outer shell, except for helium, which has only two electrons. They are **not diatomic** molecules.

24 He Helium 12
20 Ne Neon 10
40 Ar Argon 18
84 Kr Krypton 36
131 Xe Xenon 54
222 Rn Radon 86

The boiling points of the noble gases increase with increasing relative atomic mass or going down the group.

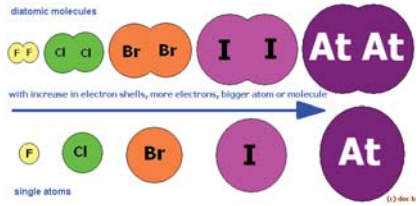
7

Enquiry Task

1. Research the elements in Group 0. Make a table of information to explain their trends. Include when and who discovered them.
2. Explain why Helium is significantly different in Group 0 compared to the other elements.

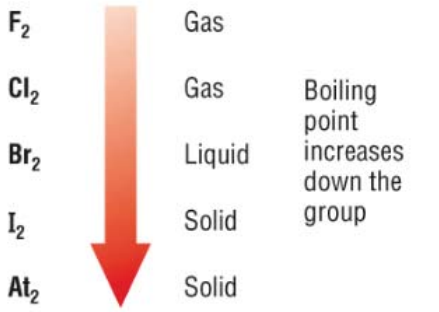
7

The elements in **Group 7** of the periodic table are known as the **halogens** and have similar reactions because they all have seven electrons in their outer shell. The halogens are non-metals and consist of molecules made of pairs of atoms. This pair of atoms are called **diatomic molecules**.



In Group 7, the further down the group an element is the higher its relative molecular mass, melting point and boiling point. In Group 7, the reactivity of the elements decreases going down the group (that's opposite to Group 1).

The reactivity of the halogens can also depend on the reactivity series. You may have seen how a more reactive halogen can displace a less reactive halogen from an aqueous solution of its salt. This is called a displacement reaction.
When chlorine, bromine and iodine react with metals the accept an electron to complete their outer shell. This forms a negative 1– ion. When chlorine, bromine and iodine react with non-metals they share an electron in the outer shell forming a covalent bond.



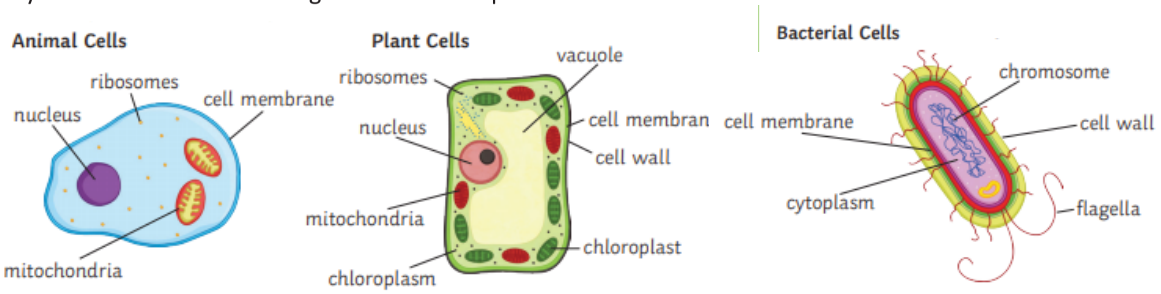
Enquiry Task

1. Explain why the halogens become a charged particle of 1– when they react with a metal but not with a non-metal.
2. Draw a table for as many of the trends that you can for the halogens.

1. Eukaryotes and prokaryotes

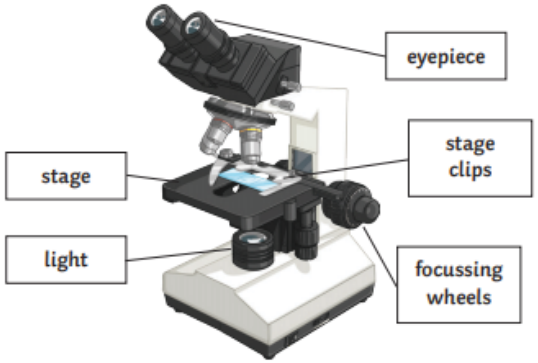
Plant and animal cells (eukaryotic cells) have a cell membrane, cytoplasm and genetic material enclosed in a nucleus.

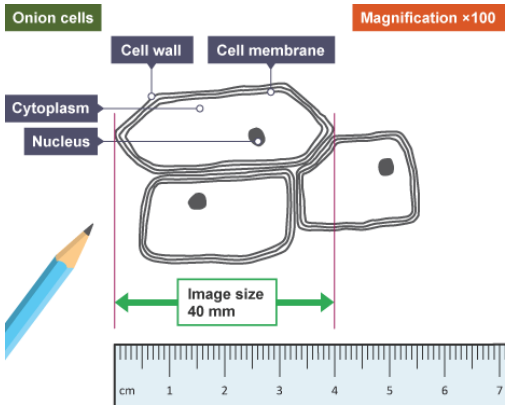
Bacterial cells (prokaryotic cells) are much smaller in comparison. They have cytoplasm and a cell membrane surrounded by a cell wall. The genetic material is not enclosed in a nucleus. It is a single DNA loop and there may be one or more small rings of DNA called plasmids.



2. Required practical

Microscopy Required Practical: use a light microscope to observe, draw and label a selection of plant and animal cells.





You can calculate the actual size of the onion cells by using the equation:

Convert to µm (multiply by 1000) = 0.4mm x 1000 = 400µ

$$\text{Actual size of the object} = \frac{\text{size of image}}{\text{Magnification}} = \frac{400\mu}{100} = 4\mu$$

Convert to µm (multiply by 1000) = 0.4mm x 1000 = 400µ

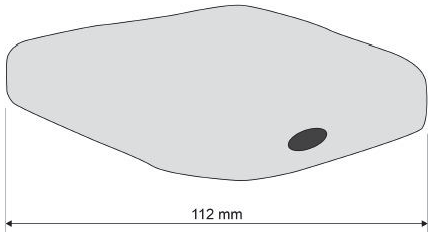
Enquiry tasks

1. Complete similarities and differences table for animal and plant cells

	Animal	Plant	Bacterial cell
Nucleus			
Cytoplasm			
Chloroplast			
Cell membrane			
Cell wall			
Flagella			
Permanent vacuole			

2. The figure shows the student's drawing of one of the cells

The real length of the cell was 280 micrometres (µm). Calculate the magnification of the drawing.



3. Cell specialisation

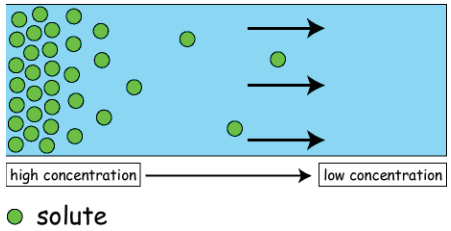
When a cell changes to become a specialised cell, it is call differentiation.

Specialised cell	Function	Adaptation
Sperm	To get the male DNA to the female DNA	Streamlined head, long tail, lots of mitochondria in to provide energy.
Nerve	To send electrical impulses around the body	Long t cover more distance. Has branched connections to connect in a network
Muscle	To contract quickly	Long and contain lots of mitochondria for energy
Root hair	To absorb water from the soil	A large surface area to absorb more water
Phloem	Transports substances around the plant	Pores to allow cell sap to flow. Cells are long ad joined end-to-end.
Xylem	Transports water through the plant	Hallow in the centre. Tubes are joined end-to-end.

4. Transport in cells

Diffusion

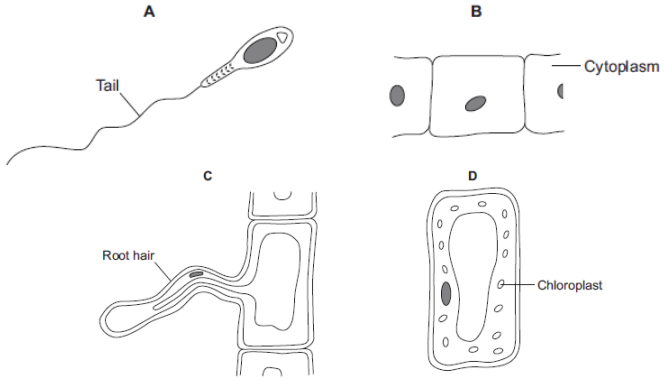
Diffusion is the spreading out of the particles of any substance in solution, or particles of a gas, resulting in a net movement from an area of higher concentration to an area of lower concentration.



Factors which affect the rate of diffusion are:

- the difference in concentrations (concentration gradient)
- the temperature
- the surface area of the membrane.

3. The diagrams show four types of cell, **A**, **B**, **C** and **D**.
Two of the cells are plant cells and two are animal cells.(a)



(i) Which **two** of the cells are plant cells? **(1)**

(ii) Give **one** reason for your answer. **(1)**

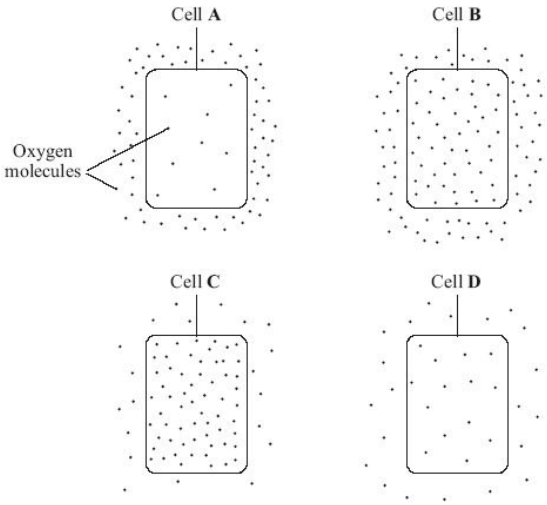
(b) (i) Which cell, **A**, **B**, **C** or **D**, is adapted for swimming? **(1)**

(ii) Which cell, **A**, **B**, **C** or **D**, can produce glucose by photosynthesis? **(1)**

4. The diagrams show cells containing and surrounded by oxygen molecules.

Into which cell will oxygen move the fastest.

Explain your answer.



1

Energy stores and systems: A system is an object or group of objects.

Energy Stores	
kinetic	Moving objects have kinetic energy.
thermal	All objects have thermal energy.
chemical	Anything that can release energy during a chemical reaction.
elastic potential	Things that are stretched.
gravitational potential	Anything that is raised.
electrostatic	Charges that attract or repel.
magnetic	Magnets that attract or repel.
nuclear	The nucleus of an atom releases energy.

Conservation of Energy

Energy can never be created or destroyed, just transferred from one form to another.

There are four types of energy transfer:

- mechanical work - a force moving an object through a distance
- electrical work - charges moving due to a potential difference
- heating - due to temperature difference caused electrically or by chemical reaction.
- radiation - energy transferred as a wave, eg light and infrared - light radiation and

2

Power is the rate of transfer of energy – the amount of work done in a given time.

Power = work done ÷ time —> P (W) = W (J) ÷ t (s)

Power = energy transferred ÷ time —> P (W) = E (J) ÷ t (s)

Efficiency

When energy is transferred, some energy is ALWAYS wasted. The less energy that is wasted during the transfer, the more efficient the transfer. There are two ways to calculate efficiency:

$$efficiency = \frac{useful\ output\ energy\ transfer}{total\ input\ energy\ transfer} = \frac{useful\ power\ output}{total\ power\ input}$$

Lubrication and insulation can both increase efficiency but efficiency will always be less than 100% as some energy is always wasted.

1

Task: Describe the energy store changes using the energy stores on the left:

1– A football has been kicked upwards.

As the ball moves upwards, the kinetic energy store of the ball_____ and the _____store of the ball increases.

2– A squash ball hitting a wall.

When the ball hits the wall, the kinetic energy store of the ball _____ and the _____ store increases. Some of the energy is also transferred to the surroundings. The thermal energy store of the _____ increases and some of the energy is carried by sound waves.

In 1 and 2, identify the energy transfer pathways._____

3– Describe the energy changes of a pendulum swinging side to side

_____

2

Task:

1 - Calculate the efficiency of a hair dryer which takes in 3000J of energy per second and transfers 600J as useful heat energy. Express your answer as a decimal and not as a percentage. _____

2- What is the useful work done by a runner of efficiency 0.30 when supplied with 200J of energy?

_____

_____

_____

3-A light bulb is rated as 40W

(a) How much electrical energy does this bulb use in one second? (you need to rearrange P= E / t)

(b) Calculate the efficiency of the bulb if it gives out 5J of light in one second. (rearrange efficiency equation)

(c) What is the percentage efficiency of the bulb?

(d) What is the useful power output of the light bulb?

(e) How much light energy should the bulb give out in 3 minutes?

(f) How much heat energy should the bulb give out in 3 minutes?

3

The kinetic energy of a moving object can be calculated using the equation:

Kinetic energy = 0.5 × mass × speed^2

$E_k = 1/2\ m\ v^2$

Where: kinetic energy, Ek, in joules, J
mass, m, in kilograms, kg
speed, v, in metres per second, m/s

The amount of elastic potential energy stored in a stretched spring can be calculated using the equation:

Elastic potential energy = 0.5 ×spring constant ×extension^2

$E_e = 1/2\ m\ e^2$

(assuming the limit of proportionality has not been exceeded)

Where: elastic potential energy, Ee, in joules, J
spring constant, k, in newtons per metre, N/m
extension, e, in metres, m

The amount of gravitational potential energy gained by an object raised above ground level can be calculated using the equation

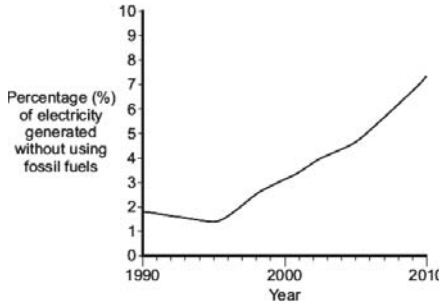
g.p.e. =mass ×gravitational field strength ×height

Ep=m g h

Where: gravitational potential energy, Ep, in joules, J
mass, m, in kilograms, kg
gravitational field strength, g, in newtons per kilogram, N/kg
height, h, In metres, m

4

Task: 1-The graph shows how the percentage of electricity generated in the UK without using fossil fuels changed between 1990 and 2010. What does the data in the graph suggest might happen to the percentage of electricity generated in the UK without using fossil fuels over the next 10 years? _____(1)



2-The world's biggest offshore wind farm started generating electricity in September 2010. One advantage of using the wind to generate electricity is that it is a renewable energy source.

(i) Give one other advantage of using the wind to generate electricity.
_____1)

(ii) Name one other renewable energy

3

Task

1- What is the kinetic energy of a 50 kg woman running at 7 m/s?
_____Joules (1)

2-A 0.4 kg football is kicked at 10 m/s vertically into the air. How high will it get before stopping? (tip– calculate the kinetic energy of the football; THEN, rearrange the g.p.e. to calculate the height for that amount of energy).

_____
_____
_____
_____
_____(5)

3- A spring has a spring constant of 2 N/m. How much elastic potential energy is stored in the spring when it is stretched the following distances:

A- 0.2 m _____J (1)
B- 1.5 m _____J (1)
C- 5 cm _____J (1)

4

Non-renewable – coal, oil, gas - they will all run out, they damage the environment, but provide most of the energy.

Renewable – they will never run out, can be unreliable and do not provide as much energy.

Energy Resource	Advantages	Disadvantages
solar – using sunlight	Renewable, no pollution, in sunny countries it is very reliable.	Lots of energy needed to build, only works during the day, cannot increase power if needed.
geothermal – using the energy of hot rocks	Renewable and reliable as the rocks are always hot. Power stations have a small impact on environment.	May release some greenhouse gases and only found in specific places.
wind – using turbines	Renewable, no pollution, no lasting damage to the environment, minimal running cost.	Not as reliable, do not work when there is no wind, cannot increase supply if needed.
hydroelectric – uses a dam	Renewable, no pollution, can increase supply if needed.	A big impact on the environment. Animals and plants may lose their habitats.
wave power – wave powered turbines	Renewable, no pollution.	Disturbs the seabed and habitats of animals. Unreliable.
tidal barrages – big dams across rivers	Renewable, very reliable, no pollution.	Changes the habitats of wildlife, fish can be killed in the turbines.
biofuels	Renewable, reliable, carbon neutral.	High costs, growing biofuels may cause a problem with regards to space, clearance of natural forests.
non-renewable – fossil fuels	Reliable, enough to meet current demand, can produce more energy when there is more demand.	Running out, release CO_2, leading to global warming, and also release SO_2 which causes acid rain.

Transferring Energy by Heating

5

Heating a material transfers the energy to its thermal energy store - the temperature increases.
E.g. a kettle: energy is transferred to the thermal energy store of the kettle. Energy is then transferred by heating to the waters thermal energy store. The temperature of the water will then increase.

Some materials need more energy to increase their temperature than others.
change in thermal energy = mass × specific heat capacity × temperature change

$$\Delta E = m \times c \times \Delta\theta$$

(J) (kg) (J/kg°C) (°C)

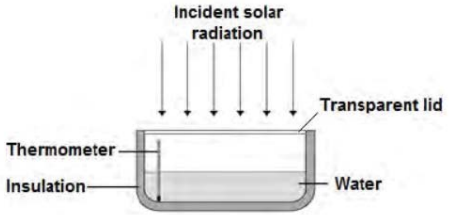
Specific heat capacity is the amount of energy needed to raise the temperature of 1kg of a material by 1°C.

Task

5

A student investigated how much energy from the Sun was incident on the Earth's surface at her location.

She put an insulated pan of water in direct sunlight and measured the time it took for the temperature of the water to increase by 0.6 °C. The apparatus she used is shown in the figure below.



(a) Choose the most appropriate resolution for the thermometer used by the student. Tick one box. 0.1 °C ☐ 0.5 °C ☐ 1.0 °C ☐ _____(1)

(b) The energy transferred to the water was 1050 J. The time taken for the water temperature to increase by 0.6 °C was 5 minutes. The specific heat capacity of water is 4200 J / kg °C.

Write down the equation which links energy transferred, power and time.
..... (1)

(c) Calculate the mean power supplied by the Sun to the water in the pan.

Average power = ... W (2)

(d) Calculate the mass of water the student used in her investigation.
.....
.....

Mass = ... kg (3)

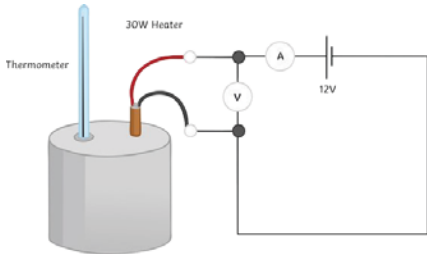
Required Practical: Investigating Specific Heat Capacity

6

Independent variable – material
dependent variable – specific heat capacity
control variables – insulating layer, initial temperature, time taken

$$\Delta E = m \times c \times \Delta\theta$$

Method:



Using the balance, measure and record the mass of the copper block in kg.

Wrap the insulation around the block.

Put the heater into the large hole in the block and the block onto the heatproof mat.

Connect the power pack and ammeter in series and the voltmeter across the power pack.

Using the pipette, put a drop of water into the small hole

Put the thermometer into the small hole and measure the temperature.

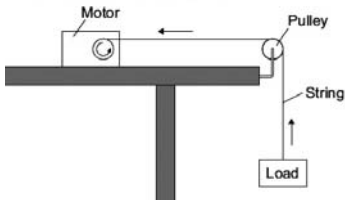
Switch the power pack to 12V and turn it on.

Read and record the voltmeter and ammeter readings .

Turn on the stop clock and record the temperature every minute for 10 minutes.

6

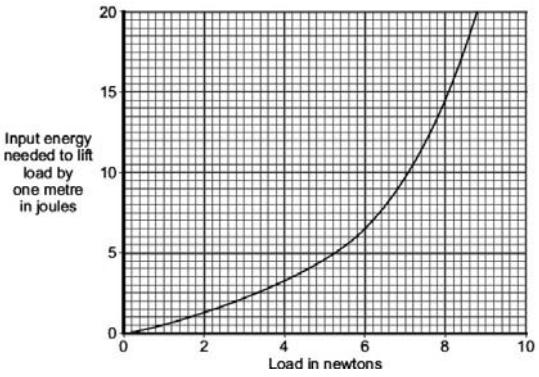
Task: A student uses an electric motor to lift a load. In the motor, the electrical energy is transferred into other types of energy. Some of this energy is useful and the rest of the energy is wasted.



a) Name the useful energy output from the electric motor. _____1)

b) What eventually happens to the wasted energy? _____(1)

c) The graph shows the input energy the motor needs to lift different loads by one metre.



What can you conclude from the graph about the relationship between the load lifted and the input energy needed?

_____

_____(2)

Need to Know Dictionary: English

Word	Definition
Satire	The use of humour, irony, exaggeration, sarcasm or ridicule to expose and criticise people's stupidity or vices, particularly in the context of contemporary politics and other topical issues.
Totalitarianism	A system of government that is centralised and dictatorial and requires complete subservience to the state.
Communism	A theory or system of social organisation in which all property is owned by the community and each person contributes and receives according to their ability and needs.
Revolution	A forcible overthrow of a government or social order, in favour of a new system.
Dystopia	An imagined state or society in which there is great suffering or injustice, typically one that is totalitarian or post-apocalyptic.
Propaganda	Information, especially of a biased or misleading nature, used to promote a political cause or point of view.
Omniscient narrator	Third-person narration in which the story-teller has an all-knowing perspective on the story being told.
Symbolism	The use of symbols to represent ideas or qualities.
Allegory	A story with a hidden meaning.
Moral	A lesson that can be derived from a story or experience.

Need to Know Dictionary: Maths

Word	Definition
Integer	A number which is not a fraction; a whole number
Significant Figure	Significant figures are the number of digits in a value
Index	The index of the number says how many times to use the number in a multiplication.
Base	The number that gets multiplied when using the index
Power	Power is the term to use to describe the base and index
Simplify	To reduce an expression or fraction to a simpler form
Expand	To expand a bracket means to multiply each term in the bracket by the expression outside the bracket
Factorise	Finding the highest common factors of an expression
Perimeter	The perimeter is the distance around the outside of a 2D shape
Area	Area is the space taken up by a surface of a 2D shape

Need to Know Dictionary: Geography

Word	Definition
Development	The progress of a country in terms of economic growth, the use of technology and human welfare
Fair trade	When producers in LICs are given a better price for the goods they produce. Often this is from farm products like cocoa, coffee or cotton. The better price improves income and reduces exploitation
Globalisation	The process which has created a more connected world, with increases in the movements of goods (trade) and people (migration and tourism) worldwide
Microfinance	As a banking service provided to unemployed or low-income individuals or groups who otherwise would have no access to financial services
Transnational Corporation (TNC)	A company that has operations (factories, offices, research and development, shops) in more than one country. Many TNCs are large and have well-known brands
Urban	An area with a dense population. Example, a town or city
Quality of life	The standard of health, comfort, and happiness experienced by an individual or group
International Aid	Assistance given from one country to another
Rural	An area that is usually relatively sparsely populated (countryside)
Infrastructure	The basic physical and organisational structures and facilities (e.g. buildings, roads and power supplies) needed for the operation of a society

Need to Know Dictionary: Science

Word	Definition
eukaryotic cells	cells from eukaryotes that have a cell membrane, cytoplasm, and genetic material enclosed in a nucleus
prokaryotic cells	from prokaryotic organisms have a cytoplasm surrounded by a cell membrane, and a cell wall that does not contain cellulose. The genetic material is a DNA loop that is free in the cytoplasm and not enclosed by a nucleus. Sometimes there are one or more small rings of DNA called plasmids
mitosis	part of the cell cycle where one set of new chromosomes is pulled to each end of the cell forming two identical nuclei during cell division
atomic number	the number of protons (which equals the number of electrons) in an atom. It is sometimes called the proton number
mass number	the number of protons plus neutrons in the nucleus of an atom
isotope	atoms that have the same number of protons but different number of neutrons, i.e., they have the same atomic number but different mass numbers
electronic structure	a set of numbers to show the arrangement of electrons in their shells (or energy levels)
useful energy	energy transferred to where it is wanted in the way that is wanted
wasted energy	energy that is not usefully transferred
work	the energy transferred by a force. Work done (joules, J) = force (newtons, N) x distance moved in the direction of the force (metres, m)

Need to Know Dictionary: History

Word	Definition
Trench	A hole in the ground for protection, or dug to find something underground
Parapet	The front of a trench, usually made with sandbags
Shrapnel	Pieces of metal that fly out of explosions
Armistice	A pause in fighting, sometimes called a ceasefire
Morale	How people feel about an event
Aid Station	Places where people can receive medical care
Nationalism	A love of your country or culture
Alliance	A deal between countries or people to work together
Militarism	A love of the armed forces and wanting to make them stronger
Imperialism	A belief that your country should take over other parts of the World

Need to Know Dictionary: Design Technology

Word	Definition
Mechanism	A mechanism is a system of parts working together in a machine or product that has movement.
Mechanical advantage	Mechanical advantage is where a mechanism will make a task easier so that the amount of force required by the user is multiplied so that the resulting force is stronger.
Philippe Starck	Philippe Starck is a French industrial designer who has designed a huge variety of products ranging from luxury yachts to hotels and kitchen equipment.
Iconic product	iconic products are well recognised/famous/influential.
Prototype	Prototypes are models of a design , these are created so that a concept can be tested.
Ethical considerations	Considering the positive and negative effect products will have on society (people) and the environment.
Sustainable design	Products that are designed to have minimal negative impact on the environment.
Aesthetics	The way a product visually appeals, good aesthetics = good looking design.
Manufacture	The processes used to create components or products from raw materials.
Assembly	Joining components together to form an end product.

Need to Know Dictionary: Art

Word	Definition
Emphatic	expressing something forcibly and clearly.
Evoke	Bring or recall (a feeling, memory, or image) to the conscious mind.
Expressive	Effectively conveying thought or feeling.
Composition	The position and layout of shapes on the paper
Post Impressionism	An art movement that explored colour, line, and form, and the emotional response of the artist.
Art movement	Is a tendency or style of art with a specific common philosophy or goal, followed by a group of artists during a specific period of time.
Psychiatric	relating to mental illness or its treatment.
Refine	To develop and improve a piece of artwork.
Formal Elements	The formal elements of art are the parts used to make up a piece of artwork.
Line	Defines shape, the outer edges of something.

Need to Know Dictionary: PE

Word	Definition
Pulse Raiser	Gradually increasing blood and oxygen supply to the working muscles.
Unopposed Practice	A practice which does not involve a defender. This reduces the amount of pressure placed on a player who can develop technique and muscle memory.
Opposed Practice	A practice which involves an opponent or defender. This usually reduces the amount of time the player has and forces them to make a wider range of decisions.
Small Side Game	A game which is conditioned to focus on certain skills or tactics.
Cool Down	Gradually reducing pulse and breathing rate, also stretching key muscle groups. Aim to remove waste products and reduce the chance of muscle soreness.
Teaching Points	Key information which supports the teaching of a skill.
STEP Principle	A method of progressing practices to add or reduce challenges. Refers to SPACE, TASK, EQUIPMENT and PEOPLE.
Risk assessment	The process of identifying hazards (things which can cause harm) which currently exist or may appear in the activity area.
Emergency procedures	What to do in the event of an accident or other emergency. Often follows procedures (an order) to minimise further risk and chaos, whilst maximising safety.
Safe practice	Organising the group and the activities appropriately depending on the space, number of participants and equipment being used.

Need to Know Dictionary: Religious Studies

Word	Definition
Abortion	the removal of a foetus from the womb to end a pregnancy usually before the foetus is 24 weeks old
Cosmological	Relating to the origin and development of the universe.
God	the supreme being
Ethics	moral principles that govern a person's behaviour or the conducting of an activity.
Miracle	a seemingly impossible event , usually good that cannot be explained by natural or scientific laws and is thought to be the action of God
Philosophy	is the pursuit of wisdom, truth, and knowledge.
Situation ethics	a system of ethics by which acts are judged within their contexts instead of by categorical principles
Teleological	exhibiting or relating to design or purpose especially in nature.
Utilitarianism	a system of ethics by which a person ought to act to maximise happiness or pleasure and to minimise unhappiness or pain.
Theodicy	a defence of God's goodness and omnipotence in the view of the existence of evil.

Need to Know Dictionary: Food Technology

Word	Definition
Shortening	When fats give biscuits and pastry a crumbly texture.
Aeration	Air is trapped in a mixture to make it lighter.
Creaming	Beating fat and sugar together traps tiny air bubbles into the mixture. When heated, the mixture sets and stops the bubbles from escaping.
Rubbing in	Rubbing fat into flour traps air in the mixture.
Whisking	Eggs or egg whites on their own or with other ingredients are whisked. This traps air bubbles in egg whites.
Beating	Liquids are beaten and air bubbles are trapped in the liquid.
Combine	This refers to when ingredients are mixed together when following a method for a recipe. For example, this could be combining yeast and bread flour with water to make bread dough or to combine sugar with butter and then adding the eggs and flour to make a cake.
Knead	You knead the bread dough to make it smooth and stretchy. The palm of the hand is used to push the dough away from you then it is pulled back towards you by folding it back over from the front then it is pushed away again. This is repeated to make the dough soft and stretchy and it activates the gluten in the flour along with the yeast.
Consistency	This refers to how a food holds together or what it looks and feels like. The consistency of a sauce could be thick or runny, smooth or lumpy
Incorporated	This refers to different ingredients being mixed together to make one thing such as bread dough, pastry and cheese sauce.

Need to Know Dictionary: Creative iMedia

Word	Definition
Traditional/old media	'Traditional media' or 'old media' are the names given to the industries that existed before the internet, like radio, print and television.
New media	New media is on-demand content accessed via the internet through digital devices, such as personal computers and smartphones.
Media sectors	The main media sectors are film, television, video games, print, publishing and also the internet
Influencing factors	The influencing factors are those factors that can affect some features of target object.
Media purposes	These include to entertain, to advertise, to educate, to promote, to influence
Client requirements	The list of what the media product must be like in order to be suitable for the target audience and purpose.
Target audience	A particular group at which a product such as a film or magazine is aimed.
Demographics	study of target audience characteristics e.g gender, age, income, location, interests
Visual representations	These can include: colour, shape, texture, movement, symbols and signs.
concept	an idea for something which has not yet been created
assets	the different images/video/audio collected that will be used to make the final product